CONTAINS NO CBI

EPA

Form Approved
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Comprehensive Assessment Information Rule

REPORTING FORM

When completed, send this form to:	For Agency Use Only:
Document Processing Center Office of Toxic Substances, TS-790 U.S. Environmental Protection Agency 401 M Street, SW Washington, DC 20460 Attention: CAIR Reporting Office	Date of Receipt: _____ Document Control Number: _____ Docket Number: _____

EPA Form 7710-52

SECTION 1 GENERAL MANUFACTURER, IMPORTER, AND PROCESSOR INFORMATION

PART A GENERAL REPORTING INFORMATION

1.01 This Comprehensive Assessment Information Rule (CAIR) Reporting Form has been completed in response to the Federal Register Notice of..... [1][2] (mo.) [2][2] (day) [8][8] (year)

CBI

[ ] a. If a Chemical Abstracts Service Number (CAS No.) is provided in the Federal Register, list the CAS No. ..... [0][2][6][4][7][1]-[6][2]-[5]

b. If a chemical substance CAS No. is not provided in the Federal Register, list either (i) the chemical name, (ii) the mixture name, or (iii) the trade name of the chemical substance as provided in the Federal Register.

(i) Chemical name as listed in the rule ..... _____

(ii) Name of mixture as listed in the rule .... _____

(iii) Trade name as listed in the rule ..... _____

c. If a chemical category is provided in the Federal Register, report the name of the category as listed in the rule, the chemical substance CAS No. you are reporting on which falls under the listed category, and the chemical name of the substance you are reporting on which falls under the listed category.

Name of category as listed in the rule ..... _____

CAS No. of chemical substance ..... [ ][ ][ ][ ][ ][ ]-[ ][ ]-[ ]

Name of chemical substance ..... _____

1.02 Identify your reporting status under CAIR by circling the appropriate response(s).

CBI

Manufacturer 1

[ ] Importer 2

Processor ..... (3)

X/P manufacturer reporting for customer who is a processor 4

X/P processor reporting for customer who is a processor 5

[ ] Mark (X) this box if you attach a continuation sheet.

1.03 Does the substance you are reporting on have an "x/p" designation associated with it in the above-listed Federal Register Notice?

CBI

[ ]

Yes ..... [X] Go to question 1.04

No ..... [ ] Go to question 1.05

1.04 a. Do you manufacture, import, or process the listed substance and distribute it under a trade name(s) different than that listed in the Federal Register Notice? Circle the appropriate response.

CBI

[ ]

Yes ..... (1)

No 2

b. Check the appropriate box below:

[X] You have chosen to notify your customers of their reporting obligations

Provide the trade name(s) .... See Continuation Sheet

[ ] You have chosen to report for your customers

[X] You have submitted the trade name(s) to EPA one day after the effective date of the rule in the Federal Register Notice under which you are reporting.

1.05 If you buy a trade name product and are reporting because you were notified of your reporting requirements by your trade name supplier, provide that trade name.

CBI

[ ]

Trade name ..... Mondur TD

Is the trade name product a mixture? Circle the appropriate response.

Yes 1

No ..... (2)

1.06 Certification -- The person who is responsible for the completion of this form must sign the certification statement below:

CBI

[ ]

"I hereby certify that, to the best of my knowledge and belief, all information entered on this form is complete and accurate."

James B. LaPrad	James B. LaPrad	3/24/89
NAME	SIGNATURE	DATE SIGNED

Manufacturing Manager	(313) 591 - 5562
TITLE	TELEPHONE NO.

[X] Mark (X) this box if you attach a continuation sheet.

1.07 Exemptions From Reporting -- If you have provided EPA or another Federal agency with the required information on a CAIR Reporting Form for the listed substance within the past 3 years, and this information is current, accurate, and complete for the time period specified in the rule, then sign the certification below. You are required to complete section 1 of this CAIR form and provide any information now required but not previously submitted. Provide a copy of any previous submissions along with your Section 1 submission.

CBI
[ ]

"I hereby certify that, to the best of my knowledge and belief, all required information which I have not included in this CAIR Reporting Form has been submitted to EPA within the past 3 years and is current, accurate, and complete for the time period specified in the rule."

N/A NAME	SIGNATURE	DATE SIGNED
TITLE	(_____) _____ - _____ TELEPHONE NO.	DATE OF PREVIOUS SUBMISSION

1.08 CBI Certification -- If you have asserted any CBI claims in this report you must certify that the following statements truthfully and accurately apply to all of those confidentiality claims which you have asserted.

CBI
[ ]

"My company has taken measures to protect the confidentiality of the information, and it will continue to take these measures; the information is not, and has not been, reasonably ascertainable by other persons (other than government bodies) by using legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding) without my company's consent; the information is not publicly available elsewhere; and disclosure of the information would cause substantial harm to my company's competitive position."

NAME	SIGNATURE	DATE SIGNED
TITLE	(_____) _____ - _____ TELEPHONE NO.	

[ ] Mark (X) this box if you attach a continuation sheet.

PART B CORPORATE DATA

1.09 Facility Identification

CBI Name [B][A][S][F][ ][C][O][R][P][O][R][A][T][O][N][ ][ ][ ][ ][ ][ ][ ][ ][ ]

[ ] Address [1][3][G][O][O][ ][L][E][V][A][N][ ][R][O][A][D][ ][ ][ ][ ][ ][ ][ ][ ]
Street

[L][I][V][O][N][I][A][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]
City

[M][I] [4][8][1][5][0]--[ ][ ][ ][ ]
State Zip

Dun & Bradstreet Number .....[1][4]-[4][2][4]-[0][0][4][1]

EPA ID Number .....[9][8][1][1][9][4][2][6][9]

Employer ID Number .....[1][6][1][0][9][0][8][2][9]

Primary Standard Industrial Classification (SIC) Code .....[2][8][2][1]

Other SIC Code .....NA[ ][ ][ ][ ]

Other SIC Code .....NA[ ][ ][ ][ ]

1.10 Company Headquarters Identification

CBI Name [B][A][S][F][ ][C][O][R][P][O][R][A][T][I][O][N][ ][ ][ ][ ][ ][ ][ ][ ][ ]

[ ] Address [8][ ][C][A][M][P][U][S][ ][D][R][I][V][E][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]
Street

[P][A][R][S][I][P][P][A][N][Y][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]
City

[N][J] [0][7][0][5][4]--[ ][ ][ ][ ]
State Zip

Dun & Bradstreet Number .....[0][0]-[1][3][0]-[7][0][3][4]

Employer ID Number .....[1][2][1][0][9][0][8][0][9]

[ ] Mark (X) this box if you attach a continuation sheet.

1.11 Parent Company Identification

CBI Name [B][A][S][F][ ][A][k][t][i][e][n][g][e][s][e][l][l][s][c][h][a][f][t][ ][ ][ ]

[ ] Address [6][7][0][0][ ]
Street

[L][u][d][w][i][g][s][h][a][f][e][n][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]
City

West Germany [ ][ ] [ ][ ][ ][ ][ ]--[ ][ ][ ][ ]
State Zip

Dun & Bradstreet Number .....[ ][ ]-[ ][ ][ ]-[ ][ ][ ][ ]

1.12 Technical Contact

CBI Name [M][A][R][Y][ ][K][I][O][S][K][O][W][S][K][I][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

[ ] Title [M][a][n][a][g][e][r][ ][G][o][v][e][r][n][m][e][n][t][ ][R][e][g][u][l][a][t]

Address [1][6][0][9][ ][B][i][d][d][l][e][ ][A][v][e][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]
Street

[W][Y][A][N][D][O][T][T][e][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]
City

[M][I] [4][8][1][9][2]--[3][7][9][9]
State Zip

Telephone Number .....[3][1][3]-[2][4][6]-[6][2][1][0]

1.13 This reporting year is from ..... [0][1] [8][8] to [1][2] [8][8]
Mo. Year Mo. Year

[ ] Mark (X) this box if you attach a continuation sheet.

1.14 Facility Acquired -- If you purchased this facility during the reporting year, provide the following information about the seller:

N/A
CBI Name of Seller [ ]

[ ] Mailing Address [ ]
Street

[ ]
City

[ ][ ] [ ][ ][ ][ ][ ]--[ ][ ][ ][ ]
State Zip

Employer ID Number .....[ ][ ][ ][ ][ ][ ][ ][ ]

Date of Sale .....[ ][ ] [ ][ ] [ ][ ]
Mo. Day Year

Contact Person [ ]

Telephone Number .....[ ][ ][ ]-[ ][ ][ ]-[ ][ ][ ][ ]

1.15 Facility Sold -- If you sold this facility during the reporting year, provide the following information about the buyer:

N/A
CBI Name of Buyer [ ]

[ ] Mailing Address [ ]
Street

[ ]
City

[ ][ ] [ ][ ][ ][ ][ ]--[ ][ ][ ][ ]
State Zip

Employer ID Number .....[ ][ ][ ][ ][ ][ ][ ][ ]

Date of Purchase .....[ ][ ] [ ][ ] [ ][ ]
Mo. Day Year

Contact Person [ ]

Telephone Number .....[ ][ ][ ]-[ ][ ][ ]-[ ][ ][ ][ ]

[ ] Mark (X) this box if you attach a continuation sheet.

1.16 For each classification listed below, state the quantity of the listed substance that was manufactured, imported, or processed at your facility during the reporting year.

CBI

[ ]

Classification	Quantity (kg/yr)
Manufactured	N/A
Imported	N/A
Processed (include quantity repackaged)	1.09 Million
Of that quantity manufactured or imported, report that quantity:	
In storage at the beginning of the reporting year	N/A
For on-site use or processing	N/A
For direct commercial distribution (including export)	N/A
In storage at the end of the reporting year	N/A
Of that quantity processed, report that quantity:	
In storage at the beginning of the reporting year	0.18 Million
Processed as a reactant (chemical producer)	0.93 Million
Processed as a formulation component (mixture producer)	0.15 Million
Processed as an article component (article producer)	N/A
Repackaged (including export)	0.01 Million
In storage at the end of the reporting year	0.04 Million

[ ] Mark (X) this box if you attach a continuation sheet.

PART C IDENTIFICATION OF MIXTURES

1.17 Mixture -- If the listed substance on which you are required to report is a mixture or a component of a mixture, provide the following information for each component chemical. (If the mixture composition is variable, report an average percentage of each component chemical for all formulations.)

CBI

[ ]

Component Name	Supplier Name	Average % Composition by Weight (specify precision, e.g., 45% ± 0.5%)
TOLUENE DIISOCYANATE	BASF CORPORATION	70% ± 10%
POLYMERIC METHYLENE BISPHENYL ISOCYANATE	BASF CORPORATION	30% ± 10%
		Total 100%

[ ] Mark (X) this box if you attach a continuation sheet.

2.04 State the quantity of the listed substance that your facility manufactured, imported, or processed during the 3 corporate fiscal years preceding the reporting year in descending order.

CBI

[ ] Year ending ..... [1][2] Mo. [8][5] Year

Quantity manufactured ..... N/A kg

Quantity imported ..... N/A kg

Quantity processed ..... N/A kg

Year ending ..... [1][2] Mo. [8][6] Year

Quantity manufactured ..... N/A kg

Quantity imported ..... N/A kg

Quantity processed ..... 1.21 Million kg

Year ending ..... [1][2] Mo. [8][7] Year

Quantity manufactured ..... N/A kg

Quantity imported ..... N/A kg

Quantity processed ..... 0.86 Million kg

2.05 Specify the manner in which you manufactured the listed substance. Circle all appropriate process types.

CBI

[ ] N/A

Continuous process 1

Semicontinuous process 2

Batch process ..... (3)

[ ] Mark (X) this box if you attach a continuation sheet.

2.06 Specify the manner in which you processed the listed substance. Circle all
CBI appropriate process types.

[ ]

Continuous process 1

Semicontinuous process 2

Batch process ..... (3)

2.07 State your facility's name-plate capacity for manufacturing or processing the listed substance. (If you are a batch manufacturer or batch processor, do not answer this
CBI question.)

[ ]

Manufacturing capacity ..... N/A kg/yr

Processing capacity ..... N/A kg/yr

2.08 If you intend to increase or decrease the quantity of the listed substance manufactured, imported, or processed at any time after your current corporate fiscal year, estimate the increase or decrease based upon the reporting year's production
CBI volume.

[ ]

	Manufacturing Quantity (kg)	Importing Quantity (kg)	Processing Quantity (kg)
Amount of increase	N/A	N/A	N/A
Amount of decrease	N/A	N/A	-0.50 Million

[ ] Mark (X) this box if you attach a continuation sheet.

2.09 For the three largest volume manufacturing or processing process types involving the listed substance, specify the number of days you manufactured or processed the listed substance during the reporting year. Also specify the average number of hours per day each process type was operated. (If only one or two operations are involved, list those.)

CBI

[ ]

	Days/Year	Average Hours/Day
Process Type #1 (The process type involving the largest quantity of the listed substance.)		
Manufactured	N/A	N/A
Processed	100	5.5
Process Type #2 (The process type involving the 2nd largest quantity of the listed substance.)		
Manufactured	N/A	N/A
Processed	25	2
Process Type #3 (The process type involving the 3rd largest quantity of the listed substance.)		
Manufactured	N/A	N/A
Processed	N/A	N/A

2.10 State the maximum daily inventory and average monthly inventory of the listed substance that was stored on-site during the reporting year in the form of a bulk chemical.

CBI

[ ]

Maximum daily inventory ..... _____ kg

Average monthly inventory ..... _____ kg

[ ] Mark (X) this box if you attach a continuation sheet.

2.11 Related Product Types -- List any byproducts, coproducts, or impurities present with the listed substance in concentrations greater than 0.1 percent as it is manufactured, imported, or processed. The source of byproducts, coproducts, or impurities means the source from which the byproducts, coproducts, or impurities are made or introduced into the product (e.g., carryover from raw material, reaction product, etc.).

CBI

[ ] *

CAS No.	Chemical Name	Byproduct, Coproduct or Impurity[1]	Concentration (%) (specify ± % precision)	Source of Byproducts, Coproducts, or Impurities

[1]Use the following codes to designate byproduct, coproduct, or impurity:

B = Byproduct
C = Coproduct
I = Impurity

* There are no byproducts, coproducts, or impurities presesnt with the listed substance in concentrations greater than 0.1 percent.

[ ] Mark (X) this box if you attach a continuation sheet.

2.12 Existing Product Types -- List all existing product types which you manufactured, imported, or processed using the listed substance during the reporting year. List the quantity of listed substance you use for each product type as a percentage of the total volume of listed substance used during the reporting year. Also list the CBI quantity of listed substance used captively on-site as a percentage of the value [ ] listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

a. Product Types[1]	b. % of Quantity Manufactured, Imported, or Processed	c. % of Quantity Used Captively On-Site	d. Type of End-Users[2]
B	100	32.5	I

[1]Use the following codes to designate product types:

A = Solvent
B = Synthetic reactant
C = Catalyst/Initiator/Accelerator/ Sensitizer
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant
E = Analytical reagent
F = Chelator/Coagulant/Sequestrant
G = Cleanser/Detergent/Degreaser
H = Lubricant/Friction modifier/Antiwear agent
I = Surfactant/Emulsifier
J = Flame retardant
K = Coating/Binder/Adhesive and additives
L = Moldable/Castable/Rubber and additives
M = Plasticizer
N = Dye/Pigment/Colorant/Ink and additives
O = Photographic/Reprographic chemical and additives
P = Electrodeposition/Plating chemicals
Q = Fuel and fuel additives
R = Explosive chemicals and additives
S = Fragrance/Flavor chemicals
T = Pollution control chemicals
U = Functional fluids and additives
V = Metal alloy and additives
W = Rheological modifier
X = Other (specify) _____

[2]Use the following codes to designate the type of end-users:

I = Industrial
CM = Commercial
CS = Consumer
H = Other (specify) _____

[ ] Mark (X) this box if you attach a continuation sheet.

2.13 Expected Product Types -- Identify all product types which you expect to manufacture, import, or process using the listed substance at any time after your current corporate fiscal year. For each use, specify the quantity you expect to manufacture, import, or process for each use as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI
[ ]

a. Product Types[1]	b. % of Quantity Manufactured, Imported, or Processed	c. % of Quantity Used Captively On-Site	d. Type of End-Users[2]
B	100	25.4	I

[1]Use the following codes to designate product types:

A = Solvent
B = Synthetic reactant
C = Catalyst/Initiator/Accelerator/Sensitizer
D = Inhibitor/Stabilizer/Scavenger/Antioxidant
E = Analytical reagent
F = Chelator/Coagulant/Sequestrant
G = Cleanser/Detergent/Degreaser
H = Lubricant/Friction modifier/Antiwear agent
I = Surfactant/Emulsifier
J = Flame retardant
K = Coating/Binder/Adhesive and additives
L = Moldable/Castable/Rubber and additives
M = Plasticizer
N = Dye/Pigment/Colorant/Ink and additives
O = Photographic/Reprographic chemical and additives
P = Electrodeposition/Plating chemicals
Q = Fuel and fuel additives
R = Explosive chemicals and additives
S = Fragrance/Flavor chemicals
T = Pollution control chemicals
U = Functional fluids and additives
V = Metal alloy and additives
W = Rheological modifier
X = Other (specify) _____

[2]Use the following codes to designate the type of end-users:

I = Industrial
CM = Commercial
CS = Consumer
H = Other (specify) _____

[ ] Mark (X) this box if you attach a continuation sheet.

2.14 CBI [ ] Final Product -- Complete the following table for each type of final product manufactured, imported, or processed at your facility that contains the listed substance other than as an impurity.

a. Product Type[1]	b. Final Product's Physical Form[2]	c. Average % Composition of Listed Substance in Final Product	d. Type of End-Users[3]
B	B	46.2	I

[1]Use the following codes to designate product types:

A = Solvent
B = Synthetic reactant
C = Catalyst/Initiator/Accelerator/Sensitizer
D = Inhibitor/Stabilizer/Scavenger/Antioxidant
E = Analytical reagent
F = Chelator/Coagulant/Sequestrant
G = Cleanser/Detergent/Degreaser
H = Lubricant/Friction modifier/Antiwear agent
I = Surfactant/Emulsifier
J = Flame retardant
K = Coating/Binder/Adhesive and additives
L = Moldable/Castable/Rubber and additives
M = Plasticizer
N = Dye/Pigment/Colorant/Ink and additives
O = Photographic/Reprographic chemical and additives
P = Electrodeposition/Plating chemicals
Q = Fuel and fuel additives
R = Explosive chemicals and additives
S = Fragrance/Flavor chemicals
T = Pollution control chemicals
U = Functional fluids and additives
V = Metal alloy and additives
W = Rheological modifier
X = Other (specify) _____

[2]Use the following codes to designate the final product's physical form:

A = Gas
B = Liquid
C = Aqueous solution
D = Paste
E = Slurry
F1 = Powder
F2 = Crystalline solid
F3 = Granules
F4 = Other solid
G = Gel
H = Other (specify) _____

[3]Use the following codes to designate the type of end-users:

I = Industrial
CM = Commercial
CS = Consumer
H = Other (specify) _____

[ ] Mark (X) this box if you attach a continuation sheet.

2.15 Circle all applicable modes of transportation used to deliver bulk shipments of the CBI listed substance to off-site customers.

[ ] Truck ..... (1)

Railcar 2

Barge, Vessel 3

Pipeline 4

Plane 5

Other (specify) _____ 6

2.16 Customer Use -- Estimate the quantity of the listed substance used by your customers or prepared by your customers during the reporting year for use under each category CBI of end use listed (i-iv).

[ ]

Category of End Use

i. Industrial Products

Chemical or mixture ..... N/A kg/yr

Article ..... N/A kg/yr

ii. Commercial Products

Chemical or mixture ..... N/A kg/yr

Article ..... N/A kg/yr

iii. Consumer Products

Chemical or mixture ..... N/A kg/yr

Article ..... N/A kg/yr

iv. Other

Distribution (excluding export) ..... N/A kg/yr

Export ..... N/A kg/yr

Quantity of substance consumed as reactant ..... 0.35 Million kg/yr

Unknown customer uses ..... N/A kg/yr

[ ] Mark (X) this box if you attach a continuation sheet.

SECTION 3 PROCESSOR RAW MATERIAL IDENTIFICATION

PART A GENERAL DATA

3.01 Specify the quantity purchased and the average price paid for the listed substance for each major source of supply listed. Product trades are treated as purchases.
CBI The average price is the market value of the product that was traded for the listed substance.
[ ]

Source of Supply	Quantity (kg)	Average Price ($/kg)
The listed substance was manufactured on-site.	N/A	N/A
The listed substance was transferred from a different company site.	0.99 Million	1.24
The listed substance was purchased directly from a manufacturer or importer.	0.10 Million	3.17
The listed substance was purchased from a distributor or repackager.	N/A	N/A
The listed substance was purchased from a mixture producer.	N/A	N/A

3.02 Circle all applicable modes of transportation used to deliver the listed substance to
CBI your facility.

[ ]

Truck ..... (1)
Railcar ..... (2)
Barge, Vessel 3
Pipeline 4
Plane 5
Other (specify) _____ 6

[ ] Mark (X) this box if you attach a continuation sheet.

3.03 a. Circle all applicable containers used to transport the listed substance to your facility.

CBI

[ ]

Bags 1

Boxes 2

Free standing tank cylinders 3

Tank rail cars 4

Hopper cars 5

Tank trucks 6

Hopper trucks 7

Drums 8

Pipeline 9

Other (specify) _____ 10

b. If the listed substance is transported in pressurized tank cylinders, tank rail cars, or tank trucks, state the pressure of the tanks.

Tank cylinders ..... N/A mmHg

Tank rail cars ..... 388 mmHg

Tank trucks ..... 388 mmHg

[ ] Mark (X) this box if you attach a continuation sheet.

PART B RAW MATERIAL IN THE FORM OF A MIXTURE

3.04 If you obtain the listed substance in the form of a mixture, list the trade name(s) of the mixture, the name of its supplier(s) or manufacturer(s), an estimate of the CBI average percent composition by weight of the listed substance in the mixture, and the amount of mixture processed during the reporting year.

[ ]

Trade Name	Supplier or Manufacturer	Average % Composition by Weight (specify ± % precision)	Amount Processed (kg/yr)
N/A			
N/A			
N/A			
N/A			

[ ] Mark (X) this box if you attach a continuation sheet.

PART C RAW MATERIAL VOLUME

3.05 CBI [ ] State the quantity of the listed substance used as a raw material during the reporting year in the form of a class I chemical, class II chemical, or polymer, and the percent composition, by weight, of the listed substance.

	Quantity Used (kg/yr)	% Composition by Weight of Listed Substance in Raw Material (specify ± % precision)
Class I chemical	0.99 Million	100% ± 0%
	0.10 Million	90% ± 3%
Class II chemical		
Polymer		

[ ] Mark (X) this box if you attach a continuation sheet.

SECTION 4 PHYSICAL/CHEMICAL PROPERTIES

General Instructions:

If you are reporting on a mixture as defined in the glossary, reply to questions in Section 4 that are inappropriate to mixtures by stating "NA -- mixture."

For questions 4.06-4.15, if you possess any hazard warning statement, label, MSDS, or other notice that addresses the information requested, you may submit a copy or reasonable facsimile in lieu of answering those questions which it addresses.

PART A PHYSICAL/CHEMICAL DATA SUMMARY

4.01 Specify the percent purity for the three major[1] technical grade(s) of the listed substance as it is manufactured, imported, or processed. Measure the purity of the substance in the final product form for manufacturing activities, at the time you import the substance, or at the point you begin to process the substance.

CBI

[ ]

	Manufacture	Import	Process
Technical grade #1	N/A % purity	N/A % purity	100 % purity
Technical grade #2	N/A % purity	N/A % purity	N/A % purity
Technical grade #3	N/A % purity	N/A % purity	N/A % purity

[1]Major = Greatest quantity of listed substance manufactured, imported or processed.

4.02 Submit your most recently updated Material Safety Data Sheet (MSDS) for the listed substance, and for every formulation containing the listed substance. If you possess an MSDS that you developed and an MSDS developed by a different source, submit your version. Indicate whether at least one MSDS has been submitted by circling the appropriate response.

Yes ..... (1)

No 2

Indicate whether the MSDS was developed by your company or by a different source.

Your company ..... (1)

Another source 2

[X] Mark (X) this box if you attach a continuation sheet.

4.03 Submit a copy or reasonable facsimile of any hazard information (other than an MSDS) that is provided to your customers/users regarding the listed substance or any formulation containing the listed substance. Indicate whether this information has been submitted by circling the appropriate response.

Yes ..... (1)

No 2

4.04 For each activity that uses the listed substance, circle all the applicable number(s) corresponding to each physical state of the listed substance during the activity listed. Physical states for importing and processing activities are determined at the time you import or begin to process the listed substance. Physical states for manufacturing, storage, disposal and transport activities are determined using the final state of the product.

CBI

[ ]

	Physical State				
Activity	Solid	Slurry	Liquid	Liquified Gas	Gas
Manufacture	1	2	3	4	5
Import	1	2	3	4	5
Process	1	2	(3)	4	5
Store	1	2	(3)	4	5
Dispose	(1)	2	(3)	4	5
Transport	1	2	(3)	4	5

[X] Mark (X) this box if you attach a continuation sheet.

4.05 Particle Size -- If the listed substance exists in particulate form during any of the following activities, indicate for each applicable physical state the size and the percentage distribution of the listed substance by activity. Do not include particles ≥10 microns in diameter. Measure the physical state and particle sizes for importing and processing activities at the time you import or begin to process the listed substance. Measure the physical state and particle sizes for manufacturing storage, disposal and transport activities using the final state of the product.

CBI

[ ]

Physical State		Manufacture	Import	Process	Store	Dispose	Transport
Dust	<1 micron	N/A	--	--	--	--	N/A
	1 to <5 microns	N/A	--	--	--	--	N/A
	5 to <10 microns	N/A	--	--	--	--	N/A
Powder	<1 micron	N/A	--	--	--	--	N/A
	1 to <5 microns	N/A	--	--	--	--	N/A
	5 to <10 microns	N/A	--	--	--	--	N/A
Fiber	<1 micron	N/A	--	--	--	--	N/A
	1 to <5 microns	N/A	--	--	--	--	N/A
	5 to <10 microns	N/A	--	--	--	--	N/A
Aerosol	<1 micron	N/A	--	--	--	--	N/A
	1 to <5 microns	N/A	--	--	--	--	N/A
	5 to <10 microns	N/A	--	--	--	--	N/A

[ ] Mark (X) this box if you attach a continuation sheet.

REFERENCES IN PARENTHESES

SECTION 5 ENVIRONMENTAL FATE

PART A RATE CONSTANTS AND TRANSFORMATION PRODUCTS

5.01 Indicate the rate constants for the following transformation processes.

a. Photolysis:

Absorption spectrum coefficient (peak) .... 871 (1/M cm) at 284 nm (1)

Reaction quantum yield, ϕ ..... No information at _____ nm

Direct photolysis rate constant, k_p, at ... $<1.2 \times 10^{-3}$ 1/hr when NO_2 photolysis rate is 0.37/hr (2)

b. Oxidation constants at 25°C:

For $^1O_2$ (singlet oxygen), k_{ox} ..... No information 1/M hr

For RO_2 (peroxy radical), k_{ox} ..... No information 1/M hr

c. Five-day biochemical oxygen demand, BOD_5 ... Not applicable due to rapid reaction with water mg/l

d. Biotransformation rate constant:

For bacterial transformation in water, k_b ... No oxygen consumed 1/hr

Specify culture ..... in modified MITI test (3)

e. Hydrolysis rate constants:

For base-promoted process, k_B ..... No information 1/M hr

For acid-promoted process, k_A ..... No information 1/M hr

For neutral process, k_N ..... No information 1/hr

f. Chemical reduction rate (specify conditions) Not expected

g. Other (such as spontaneous degradation) ... Polyurea formation under hydrolytic conditions. (4)

[ ] Mark (X) this box if you attach a continuation sheet.

PART B PARTITION COEFFICIENTS

5.02 a. Specify the half-life of the listed substance in the following media.

Media	Half-life (specify units)
Groundwater	<< 1 day in water solution (4)
Atmosphere	26 hr (2)
Surface water	<< 1 day in water solution (4)
Soil	< 1 day (4)

b. Identify the listed substance's known transformation products that have a half-life greater than 24 hours.

CAS No.	Name	Half-life (specify units)	Media
~~Not found~~	Polyurea	> 1 yr	in water and soil (4)
95-80-7	2,4-Toluene diamine	< 1 day	in biological waste-water treatment plant (4)
823-40-5	2,6-Toluene diamine	< 1 day	
5206-52-0	Urea,N,N'-bis(3-isocyanato-4-methylphenyl)-	Unknown half-life	(5,6)

5.03 Specify the octanol-water partition coefficient, K_{ow} ... reacts with both at 25°C

Method of calculation or determination ..... octanol and water

5.04 Specify the soil-water partition coefficient, K_d ..... reacts with at 25°C

Soil type ..... water

5.05 Specify the organic carbon-water partition coefficient, K_{oc} ..... reacts with water at 25°C

5.06 Specify the Henry's Law Constant, H ..... reacts with water atm-m^3/mole

[ ] Mark (X) this box if you attach a continuation sheet.

5.07 List the bioconcentration factor (BCF) of the listed substance, the species for which it was determined, and the type of test used in deriving the BCF.

Bioconcentration Factor	Species	Test
None detected	Moina macrocopa Straus	Not defined (4)
None detected	Cyprinum carpio	Not defined (4)

[1]Use the following codes to designate the type of test:

F = Flovthrough
S = Static

(1) Phillips and Nachod, eds., Organic Electronic Spectral Data, Vol IV, pg. 200.

(2) K. H. Becker, V. Bastian and Th. Klein, The reactions of toluenediisocyanate, toluenediamine and methylenedianiline under simulated atmospheric conditions, J. Photochem. and Photobiol., A: Chemistry, 45 (1988) 195-205.

(3) N. Caspers, B. Hamburger, R. Kanne and Waklebert, Ecotoxicity of TDI, MDI, TDA and MDA, Report to the International Isocyanate Institute, E-CE-41, 1986. Quoted in D. S. Gilbert, Fate of TDI and MDI in Air, Soil and Water, Polyurethanes World Congress 1987, Proceedings of the SPI/FSK.

(4) F. K. Brochhagen and B. M. Grieveson, Environmental aspects of isocyanates in water and soil, Cellular Polymers, 3 (1984) 11-17.

(5) K. Marcali, Microdetermination of toluenediisocyanate in atmosphere, Anal. Chem. 29 (1957) 552-558.

(6) G.A.Campbell, T.J.Dearlove and W.C.Meluch, Di(isocyanatotolyl)urea, U.S. Patent 3,906,019 (1975) ,Chem. Abs. 84:5645h.

[ ] Mark (X) this box if you attach a continuation sheet.

6.04 For each market listed below, state the quantity sold and the total sales value of
CBI the listed substance sold or transferred in bulk during the reporting year.

[ ] N/A

Market	Quantity Sold or Transferred (kg/yr)	Total Sales Value ($/yr)
Retail sales		
Distribution -- Wholesalers		
Distribution -- Retailers		
Intra-company transfer		
Repackagers		
Mixture producers		
Article producers		
Other chemical manufacturers or processors		
Exporters		
Other (specify)		
_____		

6.05 Substitutes -- List all known commercially feasible substitutes that you know exist for the listed substance and state the cost of each substitute. A commercially feasible substitute is one which is economically and technologically feasible to use
CBI in your current operation, and which results in a final product with comparable performance in its end uses.

[ ]

Substitute	Cost ($/kg)
NONE	N/A

[ ] Mark (X) this box if you attach a continuation sheet.

SECTION 7 MANUFACTURING AND PROCESSING INFORMATION

General Instructions:

For questions 7.04-7.06, provide a separate response for each process block flow diagram provided in questions 7.01, 7.02, and 7.03. Identify the process type from which the information is extracted.

PART A MANUFACTURING AND PROCESSING PROCESS TYPE DESCRIPTION

7.01 In accordance with the instructions, provide a process block flow diagram showing the major (greatest volume) process type involving the listed substance.

CBI

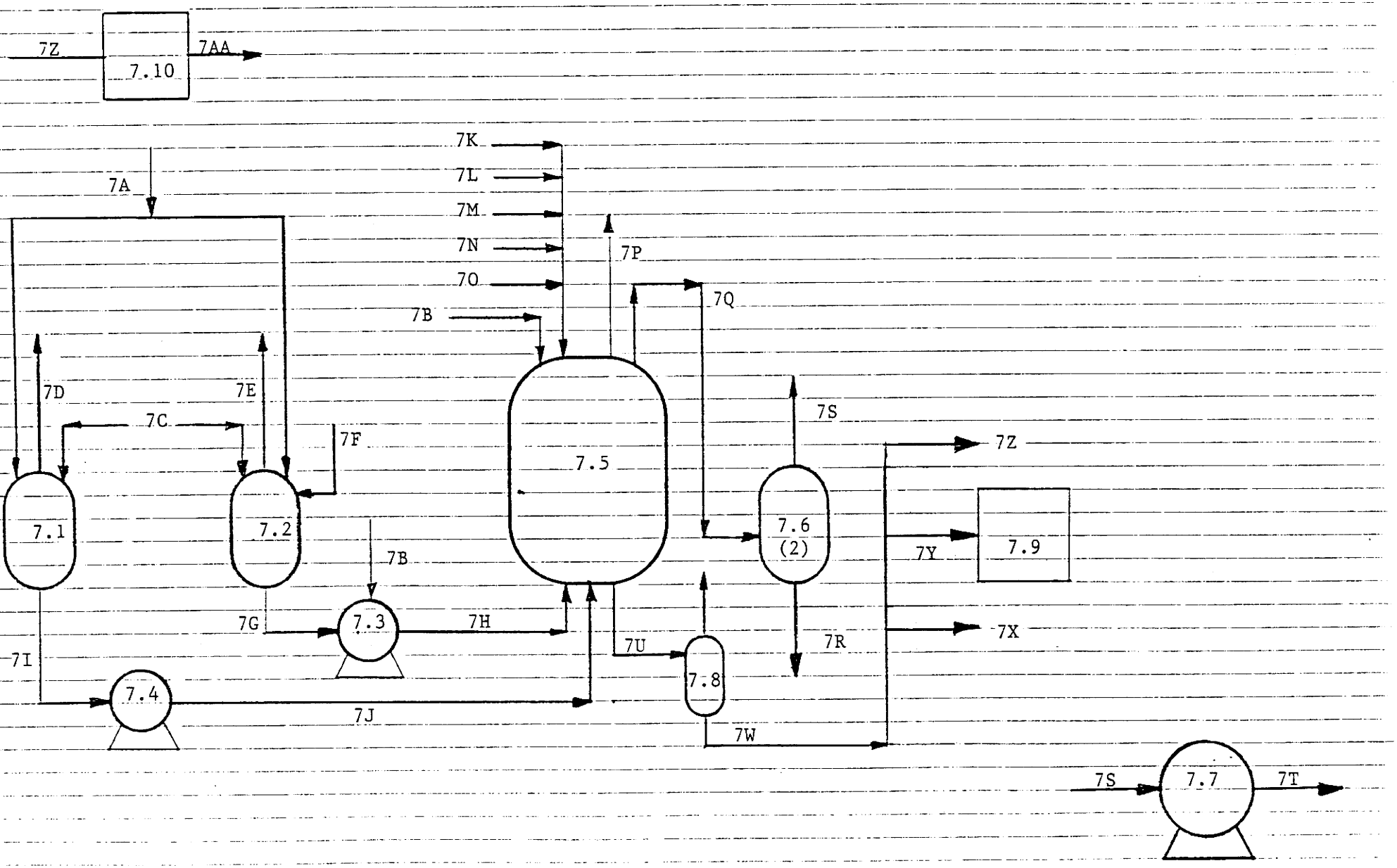
[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

see attached diagram

[ ] Mark (X) this box if you attach a continuation sheet.

7.01 Process Blockflow Diagram

PROCESS TYPE: TOLUENE DIISOCYANATE PREPOLYMER REACTION PROCESS



7.03 In accordance with the instructions, provide a process block flow diagram showing all process emission streams and emission points that contain the listed substance and which, if combined, would total at least 90 percent of all facility emissions if not treated before emission into the environment. If all such emissions are released from one process type, provide a process block flow diagram using the instructions for question 7.01. If all such emissions are released from more than one process type, provide a process block flow diagram showing each process type as a separate block.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

see attached diagram

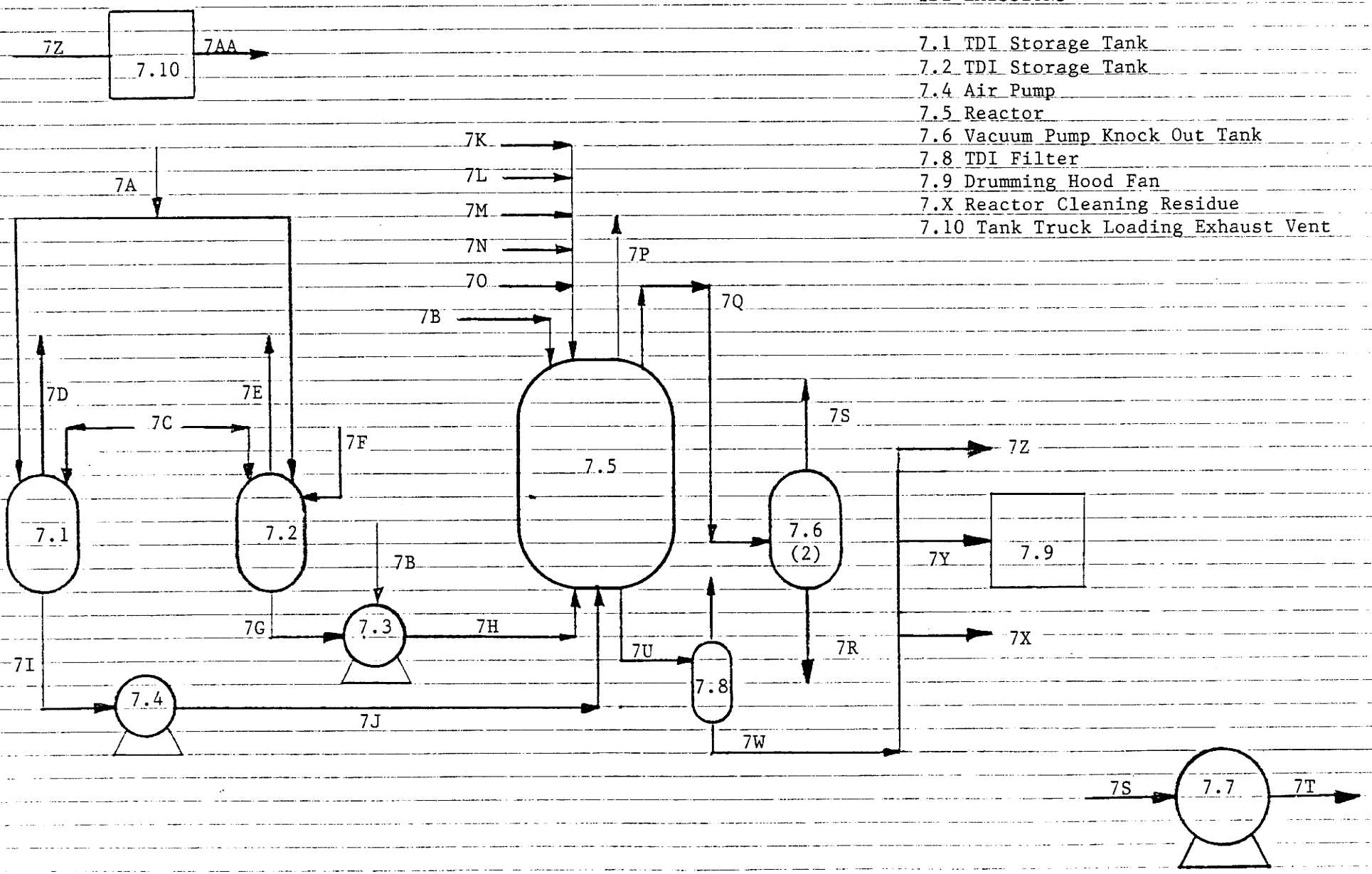
[ ] Mark (X) this box if you attach a continuation sheet.

7.03 Emissions

PROCESS TYPE: TOLUENE DIISOCYANATE PREPOLYMER REACTION PROCESS

TDI EMISSIONS

7.1 TDI Storage Tank
7.2 TDI Storage Tank
7.4 Air Pump
7.5 Reactor
7.6 Vacuum Pump Knock Out Tank
7.8 TDI Filter
7.9 Drumming Hood Fan
7.X Reactor Cleaning Residue
7.10 Tank Truck Loading Exhaust Vent



7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Unit Operation ID Number	Typical Equipment Type	Operating Temperature Range (°C)	Operating Pressure Range (mm Hg)	Vessel Composition
7.1	TDI Storage Tank	Ambient	750-1000	Stainless Steel
7.2	TDI Storage Tank	Ambient	750-1000	Carbon Steel
7.3	Air Pump	Ambient	5400	Stainless Steel
7.4	Canned Pump	Ambient	3300	Stainless Steel
7.5	TDI Reactor	8 - 120	0-2000	Stainless Steel
7.6	Vacuum Pump Knock Out Tank	Ambient	0-760	Carbon Steel
7.7	Vacuum Pump	Ambient	0-760	Carbon Steel
7.8	TDI Filter	Ambient	750-1000	Stainless Steel
7.9	Drumming Hood Fan	Ambient	754-764	Carbon Steel
7.10	Tank Truck Exhaust Vent	Ambient	Atmospheric	Flexible Hose

[ ] Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Process Stream ID Code	Process Stream Description	Physical State[1]	Stream Flow (kg/yr)
7A	TDI from Railcar	OL	1.07 Million
7B	Dry Air	GU	0.02 Million*
7C	Nitrogen	GU	0.25 Million
7D	Storage Tank Vent	GU	0.13 Million
7E	Storage Tank Vent	GU	0.12 Million
7F	Additive	OL	$7.91X10^{-6}$ Million
7G	TDI from 7.2	OL	0.15 Million
7H	TDI from Pump 7.4	OL	0.15 Million

[1]Use the following codes to designate the physical state for each process stream:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

* 40% to pump 7.4
60% to reactor 7.5

[X] Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Process Stream ID Code	b. Known Compounds[1]	c. (E,W) Concentrations[2,3] (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7A	TDI	100%	N/A	
7B	Air	100%	Oil	<1 ppm
			Water	20 ppm
7C	Nitrogen	100%	Water	.6 ppm

7.06 continued below

[X] Mark (X) this box if you attach a continuation sheet.

7.06 (continued)

[1]For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column b. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

N/A

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
1		
2		
3		
4		
5		

[2]Use the following codes to designate how the concentration was determined:

A = Analytical result
E = Engineering judgement/calculation

[3]Use the following codes to designate how the concentration was measured:

V = Volume
W = Weight

[ ] Mark (X) this box if you attach a continuation sheet.

PART A RESIDUAL TREATMENT PROCESS DESCRIPTION

8.01 In accordance with the instructions, provide a residual treatment block flow diagram which describes the treatment process used for residuals identified in question 7.01.

CBI

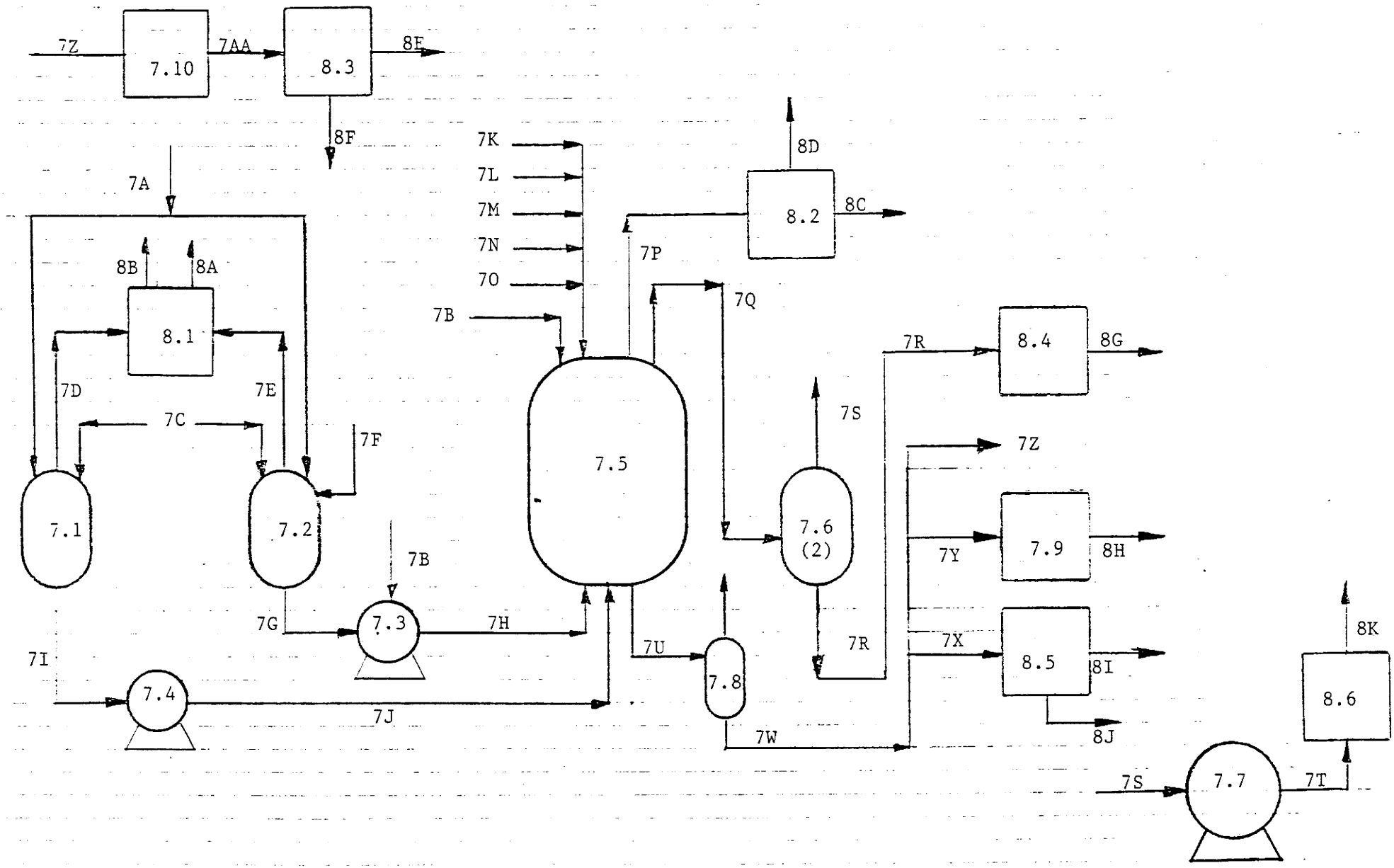
[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

see attached diagram

[ ] Mark (X) this box if you attach a continuation sheet.

8.01 RESIDUAL TREATMENT BLOCK FLOW DIAGRAM

PROCESS TYPE: TOLUENE DIISOCYANATE PREPOLYMER REACTION PROCESS



8.04 Describe the typical equipment types for each unit operation identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Unit Operation ID Number (as assigned in questions 8.01, 8.02, or 8.03)	Typical Equipment Type
8.1	Carbon Scrubber - Storage Tank
8.2	Carbon Scrubber - Reactors
8.3	Carbon Scrubber - Tank Truck Loading
8.4	Transfer to Drums
8.5	Transfer to Drums Stored in Hood
8.6	Vacuum Pump Vent

[ ] Mark (X) this box if you attach a continuation sheet.

PART B RESIDUAL GENERATION AND CHARACTERIZATION

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Stream ID Code	b. Type of Hazardous Waste[1]	c. Physical State of Residual[2]	d. Known Compounds[3]	e. (E,W) Concentrations (% or ppm)[4,5,6]	f. Other Expected Compounds	g. Estimated Concentrations (% or ppm)
8A	R,T	GU	TDI	<.001 ppm	None	
		GU	Nitrogen	>99%		
				930 ppm		
8B	R,T	OL	TDI			
		50	Carbon	>99%		
8C	R,T	GU	TDI	0.002 ppm	None	
		GU	*MDI	<0.001 ppm		
		GU	Air	>99%		
8D	R,T	OL	TDI	340 ppm	None	
		OL	MDI	.52 ppm		
		SO	Carbon	>99%		

8.05 continued below

*MDI: POLYMERIC METHYLENE (BIS) PHENYL ISOCYANATE

[X] Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

[1]Use the following codes to designate the type of hazardous waste:

I = Ignitable
C = Corrosive
R = Reactive
E = EP toxic
T = Toxic
H = Acutely hazardous

[2]Use the following codes to designate the physical state of the residual:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

8.05 continued below

[ ] Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

[3]For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column d. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

N/A Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
1		
2		
3		
4		
5		

[4]Use the following codes to designate how the concentration was determined:

A = Analytical result
E = Engineering judgement/calculation

8.05 continued below

[ ] Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

[5]Use the following codes to designate how the concentration was measured:

V = Volume
W = Weight

[6]Specify the analytical test methods used and their detection limits in the table below. Assign a code to each test method used and list those codes in column e.

Code	Method	Detection Limit (± ug/l)
1	None	
2		
3		
4		
5		
6		

[ ] Mark (X) this box if you attach a continuation sheet.

8.06 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Stream ID Code	b. Waste Description Code[1]	c. Management Method Code[2]	d. Residual Quantities (kg/yr)	e. Management of Residual (%) On-Site	e. Management of Residual (%) Off-Site	f. Costs for Off-Site Management (per kg)	g. Changes in Management Methods
8A	B91	M4C/M5A	250,000	100		N/A	N/A
8B	A12	3T	91		100	$5.30	None
8C	B91	M4C/M5A	9,600	100			None
8D	A12	3I	495		100	$5.30	None

[1]Use the codes provided in Exhibit 8-1 to designate the waste descriptions

[2]Use the codes provided in Exhibit 8-2 to designate the management methods

[X] Mark (X) this box if you attach a continuation sheet.

8.22 Describe the combustion chamber design parameters for each of the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

[ ] N/A

Incinerator	Combustion Chamber Temperature (°C)		Location of Temperature Monitor		Residence Time In Combustion Chamber (seconds)	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
1						
2						
3						

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

8.23 Complete the following table for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

[ ] N/A

Incinerator	Air Pollution Control Device[1]	Types of Emissions Data Available
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1

No 2

[1]Use the following codes to designate the air pollution control device:

S = Scrubber (include type of scrubber in parenthesis)
E = Electrostatic precipitator
O = Other (specify) _____

[ ] Mark (X) this box if you attach a continuation sheet.

SECTION 9 WORKER EXPOSURE

General Instructions:

Questions 9.03-9.25 apply only to those processes and workers involved in manufacturing or processing the listed substance. Do not include workers involved in residual waste treatment unless they are involved in this treatment process on a regular basis (i.e., exclude maintenance workers, construction workers, etc.).

[ ] Mark (X) this box if you attach a continuation sheet.

PART A EMPLOYMENT AND POTENTIAL EXPOSURE PROFILE

9.01 Mark (X) the appropriate column to indicate whether your company maintains records on the following data elements for hourly and salaried workers. Specify for each data element the year in which you began maintaining records and the number of years the CBI records for that data element are maintained. (Refer to the instructions for further explanation and an example.)

[ ]

Data Element	Data are Maintained for: Hourly Workers	Data are Maintained for: Salaried Workers	Year in Which Data Collection Began	Number of Years Records Are Maintained
Date of hire	N/A	X	1986	Indefinite
Age at hire	N/A	X	1986	Indefinite
Work history of individual before employment at your facility	N/A	X	1986	Indefinite
Sex	N/A	X	1986	Indefinite
Race	N/A	X	1986	Indefinite
Job titles	N/A	X	1986	Indefinite
Start date for each job title	N/A	X	1986	Indefinite
End date for each job title	N/A	X	1986	Indefinite
Work area industrial hygiene monitoring data	N/A	X	1986	Indefinite
Personal employee monitoring data	N/A	X	1986	Indefinite
Employee medical history	N/A	X	1986	Indefinite
Employee smoking history	N/A	X	1986	Indefinite
Accident history	N/A	X	1986	Indefinite
Retirement date	N/A	X	1986	Indefinite
Termination date	N/A	X	1986	Indefinite
Vital status of retirees	N/A	X	1986	Indefinite
Cause of death data	N/A	X	1986	Indefinite

[ ] Mark (X) this box if you attach a continuation sheet.

9.02 In accordance with the instructions, complete the following table for each activity in which you engage.

CBI

[ ]

a. Activity	b. Process Category	c. Yearly Quantity (kg)	d. Total Workers	e. Total Worker-Hours
Manufacture of the listed substance	Enclosed	N/A		
	Controlled Release	N/A		
	Open	N/A		
On-site use as reactant	Enclosed	N/A		
	Controlled Release	0.93 Million	3	1900
	Open	N/A		
On-site use as nonreactant	Enclosed	N/A		
	Controlled Release	0.15 Million	1	100
	Open	N/A		
On-site preparation of products	Enclosed	N/A		
	Controlled Release	N/A		
	Open	N/A		

[ ] Mark (X) this box if you attach a continuation sheet.

9.03 **Provide a descriptive job title for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance.**

CBI

[ ]

Labor Category	Descriptive Job Title
A	Shift Supervisor
B	Chemical Operator
C	Technician
D	Chemist
E	Sales Representative
F	Supervisor
G	Warehouse Worker
H	Maintenance Mechanic
I	Group Leader
J	Clerk
K	Temp

[ ] **Mark (X) this box if you attach a continuation sheet.**

9.04 In accordance with the instructions, provide your process block flow diagram(s) and indicate associated work areas.

CBI

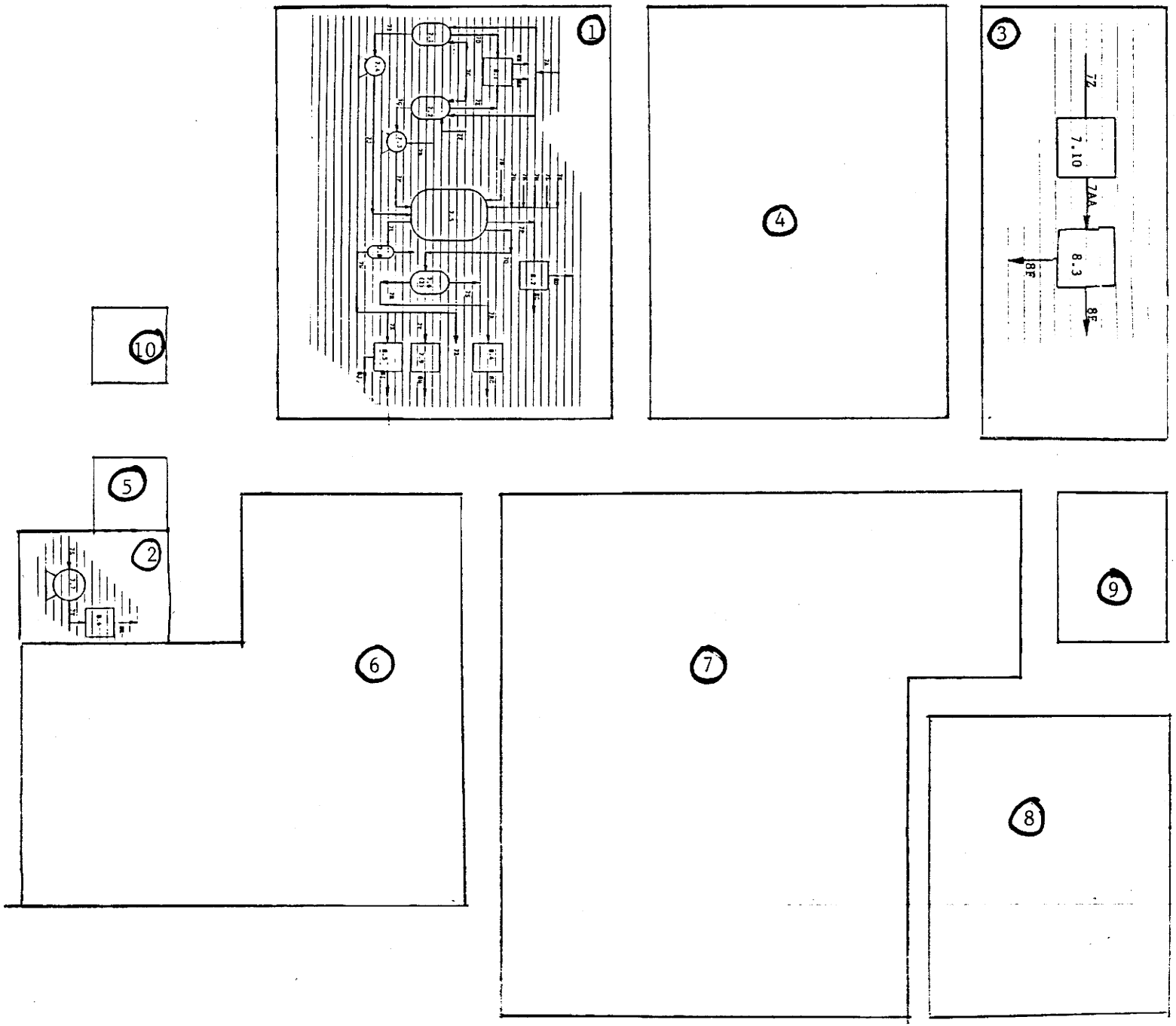
[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

see attached diagram

[ ] Mark (X) this box if you attach a continuation sheet.

9.04 Associated Work Areas

PROCESS TYPE: TDI PREPOLYMER REACTION PROCESS



9.05 **Describe the various work area(s) shown in question 9.04 that encompass workers who may potentially come in contact with or be exposed to the listed substance. Add any additional areas not shown in the process block flow diagram in question 7.01 or 7.02. Photocopy this question and complete it separately for each process type.**

CBI

[ ] **Process type .....** TDI PREPOLYMER REACTION PROCESS

Work Area ID	Description of Work Areas and Worker Activities
1	Isocyanate storage tanks and reactor area (workers charge raw materials, monitor temperatures, transfer product to drums)
2	Vacuum pump room (maintenance workers during equipment break down)
3	Tank truck loading(workers make connections to transfer product, monitor loading and unloading of tank trucks)
4	Polyol storage and Resin blending(workers charge raw materials, monitor blending and transfer product to drums)
5	Changing area(workers change into and our of uniforms and protective clothing)
6	Quality Assurance and Development are(workers test products and develop new products)
7	Warehouse area(workers store and retrieve packaged raw materials and finished goods)
8	Maintenance area(office, parts storage, and fabrication, tote cleaning)
9	Lunch room(workers take breaks)
10	Shift supervisors office(asministrative/paperwork, workers receive assignments)

[ ] **Mark (X) this box if you attach a continuation sheet.**

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 1

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
A	4	Inhalation	GU	A	96
A	4	Direct Skin Contact	OL	A	96
A	4	Eye Contact	GU	A	96
B	4	Inhalation	GU	A	96
B	4	Direct Skin Contact	OL	A	96
B	3	Eye Contact	GU	A	96

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours
D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[X] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 1

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
A	3 ppb	11 ppb
B	3 ppb	11 ppb

[X] Mark (X) this box if you attach a continuation sheet.

PART B WORK PLACE MONITORING PROGRAM

9.08 If you monitor worker exposure to the listed substance, complete the following table.

CBI

[ ]

Sample/Test	Work Area ID	Testing Frequency (per year)	Number of Samples (per test)	Who Samples[1]	Analyzed In-House (Y/N)	Number of Years Records Maintained
Personal breathing zone	1	3	1	A	Y	Indefinite
General work area (air)	1	3	1	A	Y	Indefinite
Wipe samples						
Adhesive patches						
Blood samples	1-10	1	1	D	N	Indefinite
Urine samples	1-10	1	1	D	N	Indefinite
Respiratory samples	1-10	1	1	D	Y	Indefinite
Allergy tests						
Other (specify) Chest X-Ray	1-10	1	1	D	N	Indefinite
Other (specify) Cardiogram	1-10	1	1	D	Y	Indefinite
Other (specify)						

[1]Use the following codes to designate who takes the monitoring samples:

A = Plant industrial hygienist
B = Insurance carrier
C = OSHA consultant
D = Other (specify) Medical

[ ] Mark (X) this box if you attach a continuation sheet.

9.09 For each sample type identified in question 9.08, describe the type of sampling and analytical methodology used for each type of sample.

CBI

[ ] Sample Type	Sampling and Analytical Methodology
Personal Breathing	see 9.10
General Work Area	see 9.10
Blood Samples	N/A
Urine Samples	N/A
Respirator	N/A
Chest X-Ray	N/A
Cardiogram	N/A

9.10 If you conduct personal and/or ambient air monitoring for the listed substance, specify the following information for each equipment type used.

CBI

[ ] Equipment Type[1]	Detection Limit[2]	Manufacturer	Averaging Time (hr)	Model Number
Ambient (H)	0.001 ppm	MDA	Continuous	7100
Ambient (H)	0.001 ppm	MDA	Continuous	7005
Personal (D)	0.001 ppm	MDA	8 hr	MCM
Ambient (H)	0.001 ppm	MDA	15 min	Auto Spot

[1]Use the following codes to designate personal air monitoring equipment types:

A = Passive dosimeter
B = Detector tube
C = Charcoal filtration tube with pump
D = Other (specify) MCM personal monitors with impregated tape

Use the following codes to designate ambient air monitoring equipment types:

E = Stationary monitors located within work area
F = Stationary monitors located within facility
G = Stationary monitors located at plant boundary
H = Mobile monitoring equipment (specify) within work area
I = Other (specify)

[2]Use the following codes to designate detection limit units:

A = ppm
B = Fibers/cubic centimeter (f/cc)
C = Micrograms/cubic meter (μ/m^3)

[ ] Mark (X) this box if you attach a continuation sheet.

9.11 If you conduct routine medical tests for monitoring the health effects of exposure to the listed substance, specify the type and frequency of the tests.

CBI

[ ] see 9.08

Test Description	Frequency (weekly, monthly, yearly, etc.)

[ ] Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 1

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust (Hood)	Y	1986	N	
General dilution	Y	1986	N	
Other (specify)				
Point Source (elephant trunk, sampling parts)	Y	1986	N	
Vessel emission controls	Y	1986	N	
Mechanical loading or packaging equipment	N			
Other (specify)				
	N			

[X] Mark (X) this box if you attach a continuation sheet.

9.13 **Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.**

CBI

[ ] **Process type .....** TDI PREPOLYMER REACTION PROCESS

Work area 1

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
Drumming hoods	25
Equipment Cleaning Hood	25
Point Source Ventilation	40

[X] **Mark (X) this box if you attach a continuation sheet.**

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 1

Equipment Types	Wear or Use (Y/N)
Respirators	Y
Safety goggles/glasses	Y
Face shields	Y
Coveralls	Y
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
Rubber Boots/	Y
Safety Shoes	

[X] Mark (X) this box if you attach a continuation sheet.

9.15 If workers use respirators when working with the listed substance, specify for each process type, the work areas where the respirators are used, the type of respirators used, the average usage, whether or not the respirators were fit tested, and the type and frequency of the fit tests. Photocopy this question and complete it separately for each process type.

CBI

[ ] Process type ..... Toluene Diisocyanate (TDI)

Work Area	Respirator Type	Average Usage[1]	Fit Tested (Y/N)	Type of Fit Test[2]	Frequency of Fit Tests (per year)
1,3,10	Direct Air Line	E	Y	QL	1
1,3,10	Scott Air Pak	E	Y	QL	1

[1]Use the following codes to designate average usage:

A = Daily
B = Weekly
C = Monthly
D = Once a year
E = Other (specify) As necessary

[2]Use the following codes to designate the type of fit test:

QL = Qualitative
QT = Quantitative

[ ] Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this CBI question and complete it separately for each process type and work area.

[ ]

Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 1

Warning signs forbiding food in plant area, Train workers in calibrating monitors, Protective equipment training, Emergency response and evacuation training, Clean uniforms provided daily, Routine job safety meetings and training

9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 1

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping	N/A			
Vacuuming	N/A			
Water flushing of floors	X			
Other (specify)				
* Neutralizer	X			

* Do not have routine leaks or spills of TDI. When they happen, they are sprayed with a neutralizing solution and cleaned up immediately.

[X] Mark (X) this box if you attach a continuation sheet.

9.21 Do you have a written medical action plan for responding to routine or emergency exposure to the listed substance?

Routine exposure N/A

Yes 1

No 2

Emergency exposure N/A

Yes 1

No 2

If yes, where are copies of the plan maintained?

Routine exposure: _____

Emergency exposure: _____

9.22 Do you have a written leak and spill cleanup plan that addresses the listed substance? Circle the appropriate response.

Yes ..... (1)

No 2

If yes, where are copies of the plan maintained? Safety Coordinator's Office

Has this plan been coordinated with state or local government response organizations? Circle the appropriate response.

Yes ..... (1)

No 2

9.23 Who is responsible for monitoring worker safety at your facility? Circle the appropriate response. N/A

Plant safety specialist 1

Insurance carrier 2

OSHA consultant 3

Other (specify) _____ 4

[ ] Mark (X) this box if you attach a continuation sheet.

SECTION 10 ENVIRONMENTAL RELEASE

General Instructions:

Complete Part E (questions 10.23-10.35) for each non-routine release involving the listed substance that occurred during the reporting year. Report on all releases that are equal to or greater than the listed substance's reportable quantity value, RQ, unless the release is federally permitted as defined in 42 U.S.C. 9601, or is specifically excluded under the definition of release as defined in 40 CFR 302.3(22). Reportable quantities are codified in 40 CFR Part 302. If the listed substance is not a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and, thus, does not have an RQ, then report releases that exceed 2,270 kg. If such a substance however, is designated as a CERCLA hazardous substance, then report those releases that are equal to or greater than the RQ. The facility may have answered these questions or similar questions under the Agency's Accidental Release Information Program and may already have this information readily available. Assign a number to each release and use this number throughout this part to identify the release. Releases over more than a 24-hour period are not single releases, i.e., the release of a chemical substance equal to or greater than an RQ must be reported as a separate release for each 24-hour period the release exceeds the RQ.

For questions 10.25-10.35, answer the questions for each release identified in question 10.23. Photocopy these questions and complete them separately for each release.

PART A GENERAL INFORMATION

10.01 Where is your facility located? Circle all appropriate responses.

CBI

[ ] Industrial area ..... (1)

Urban area ..... (2)

Residential area ..... (3)

Agricultural area 4

Rural area 5

Adjacent to a park or a recreational area 6

Within 1 mile of a navigable waterway 7

Within 1 mile of a school, university, hospital, or nursing home facility ..... (8)

Within 1 mile of a non-navigable waterway 9

Other (specify) _____ 10

[ ] Mark (X) this box if you attach a continuation sheet.

10.02 Specify the exact location of your facility (from central point where process unit is located) in terms of latitude and longitude or Universal Transverse Mercader (UTM) coordinates.

Latitude ..... 042 ° 21 ' 45 "

Longitude ..... 083 ° 24 ' 00 "

UTM coordinates ..... Zone N/A , Northing N/A , Easting N/A

10.03 If you monitor meteorological conditions in the vicinity of your facility, provide the following information.

Average annual precipitation ..... N/A inches/year

Predominant wind direction ..... N/A

10.04 Indicate the depth to groundwater below your facility.

Depth to groundwater ..... N/A meters

10.05 For each on-site activity listed, indicate (Y/N/NA) all routine releases of the listed substance to the environment. (Refer to the instructions for a definition of Y, N, and NA.)

CBI

[ ]

On-Site Activity	Environmental Release		
	Air	Water	Land
Manufacturing	N/A	N/A	N/A
Importing	N/A	N/A	N/A
Processing	Y	N	N
Otherwise used	N/A	N/A	N/A
Product or residual storage	Y	N	N
Disposal	N/A	N/A	N/A
Transport	N	N	N

[ ] Mark (X) this box if you attach a continuation sheet.

10.06 Provide the following information for the listed substance and specify the level of precision for each item. (Refer to the instructions for further explanation and an example.)

CBI

[ ]

Quantity discharged to the air	.003	kg/yr ±	10 %
Quantity discharged in wastewaters	0	kg/yr ±	0 %
Quantity managed as other waste in on-site treatment, storage, or disposal units	0	kg/yr ±	0 %
Quantity managed as other waste in off-site treatment, storage, or disposal units	1,081	kg/yr ±	10 %

[ ] Mark (X) this box if you attach a continuation sheet.

10.08 **Describe the control technologies used to minimize release of the listed substance for each process stream containing the listed substance as identified in your process block or residual treatment block flow diagram(s). Photocopy this question and complete it separately for each process type.**

CBI

[ ] **Process type .....** TDI PREPOLYMER REACTION PROCESS

Stream ID Code	Control Technology	Percent Efficiency
7Q	Entrained in oil in knock out tank	98 ± 1
7D, 7E, 7P, 7AA	Carbon adsorption	95 ± 4

[ ] **Mark (X) this box if you attach a continuation sheet.**

PART B RELEASE TO AIR

10.09 Point Source Emissions -- Identify each emission point source containing the listed substance in terms of a Stream ID Code as identified in your process block or residual treatment block flow diagram(s), and provide a description of each point source. Do not include raw material and product storage vents, or fugitive emission sources (e.g., equipment leaks). Photocopy this question and complete it separately for each process type.

CBI
[ ]

Process type ..... TDI PREPOLYMER REACTION PROCESS

Point Source ID Code	Description of Emission Point Source
8C	Reactor carbon adsorber vent
8E	Tank truck loading exhaust vent
8H	Drumming hood vent
8J	Cleaning hood vent
8K	Vacuum pump vent

[ ] Mark (X) this box if you attach a continuation sheet.

[ ] Mark (X) this box if you attach a continuation sheet.

10.10 Emission Characteristics - - Characterize the emissions for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

[ ]

Point Source ID Code	Physical State[1]	* Average Emissions (kg/day)	Frequency[2] (days/yr)	Duration[3] (min/day)	Average Emission Factor[4]	* Maximum Emission Rate (kg/min)	Maximum Emission Rate Frequency (events/yr)	Maximum Emission Rate Duration (min/event)
8C	G	$1.1X10^{-6}$	125	100	.001 ppm	$5X10^{-8}$	125	100
8E	G	$0.1X10^{-6}$	75	120	<.001 ppm	$.1X10^{-8}$	75	120
8H	G	$20X10^{-6}$	50	100	.001 ppm	$19X10^{-8}$	50	100
8J	G	$30X10^{-6}$	250	1,440	<.0001 ppm	$2.1X10^{-8}$	250	Continuous
8K	G	$2.2X10^{-6}$	125	200	.001 ppm	$1.1X10^{-8}$	125	200

* Does not include air, only TDI emission

[1]Use the following codes to designate physical state at the point of release:
G = Gas; V = Vapor; P = Particulate; A = Aerosol; O = Other (specify) _____

[2]Frequency of emission at any level of emission

[3]Duration of emission at any level of emission

[4]Average Emission Factor — Provide estimated (± 25 percent) emission factor (kg of emission per kg of production of listed substance)

10.11 Stack Parameters -- Identify the stack parameters for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

[ ]

Point Source ID Code	Stack Height(m)	Stack Inner Diameter (at outlet) (m)	Exhaust Temperature (°C)	Emission Exit Velocity (m/sec)	Building Height(m)[1]	Building Width(m)[2]	Vent Type[3]
8C	10.97	0.10	Ambient	0.4	8.53	85.34	V
8E	2.00	0.05	Ambient	1.6	8.53	85.34	V
8H	12.50	0.46	Ambient	10.8	8.53	85.34	V
8J	13.11	0.61	Ambient	9.4	8.53	85.34	V
8K	9.75	0.08	Ambient	28.2	8.53	85.34	V

[1]Height of attached or adjacent building

[2]Width of attached or adjacent building

[3]Use the following codes to designate vent type:

H = Horizontal
V = Vertical

[ ] Mark (X) this box if you attach a continuation sheet.

10.12 If the listed substance is emitted in particulate form, indicate the particle size distribution for each Point Source ID Code identified in question 10.09. Photocopy this question and complete it separately for each emission point source.

CBI

[ ] N/A

Point source ID code ..... _____

Size Range (microns)	Mass Fraction (% ± % precision)
< 1	_____
≥ 1 to < 10	_____
≥ 10 to < 30	_____
≥ 30 to < 50	_____
≥ 50 to < 100	_____
≥ 100 to < 500	_____
≥ 500	_____

Total = 100%

[ ] Mark (X) this box if you attach a continuation sheet.

PART C FUGITIVE EMISSIONS

10.13 Equipment Leaks -- Complete the following table by providing the number of equipment types listed which are exposed to the listed substance and which are in service according to the specified weight percent of the listed substance passing through the component. Do this for each process type identified in your process block or residual treatment block flow diagram(s). Do not include equipment types that are not exposed to the listed substance. If this is a batch or intermittently operated process, give an overall percentage of time per year that the process type is exposed to the listed substance. Photocopy this question and complete it separately for each process type.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Percentage of time per year that the listed substance is exposed to this process type ..... 25 %

Equipment Type	Number of Components in Service by Weight Percent of Listed Substance in Process Stream					
	Less than 5%	5-10%	11-25%	26-75%	76-99%	Greater than 99%
Pump seals[1]						
Packed						
Mechanical						
Double mechanical[2]						
Compressor seals[1]						
Flanges					40	10
Valves						
Gas[3]						
Liquid					20	4
Pressure relief devices[4] (Gas or vapor only)					4	2
Sample connections						
Gas						
Liquid					4	
Open-ended lines[5] (e.g., purge, vent)						
Gas						
Liquid					4	4

[1] List the number of pump and compressor seals, rather than the number of pumps or compressors

10.13 continued on next page

[ ] Mark (X) this box if you attach a continuation sheet.

10.13 (continued)

[2]If double mechanical seals are operated with the barrier (B) fluid at a pressure greater than the pump stuffing box pressure and/or equipped with a sensor (S) that will detect failure of the seal system, the barrier fluid system, or both, indicate with a "B" and/or an "S", respectively

[3]Conditions existing in the valve during normal operation

[4]Report all pressure relief devices in service, including those equipped with control devices

[5]Lines closed during normal operation that would be used during maintenance operations

10.14 Pressure Relief Devices with Controls -- Complete the following table for those pressure relief devices identified in 10.13 to indicate which pressure relief devices in service are controlled. If a pressure relief device is not controlled, enter "None" under column c.

CBI

[ ]

a. Number of Pressure Relief Devices	b. Percent Chemical in Vessel[1]	c. Control Device	d. Estimated Control Efficiency[2]
4	76 - 99	Rupture Disc	100
2	> 99	None	

[1]Refer to the table in question 10.13 and record the percent range given under the heading entitled "Number of Components in Service by Weight Percent of Listed Substance" (e.g., <5%, 5-10%, 11-25%, etc.)

[2]The EPA assigns a control efficiency of 100 percent for equipment leaks controlled with rupture discs under normal operating conditions. The EPA assigns a control efficiency of 98 percent for emissions routed to a flare under normal operating conditions

[ ] Mark (X) this box if you attach a continuation sheet.

10.15 Equipment Leak Detection -- If a formal leak detection and repair program is in place, complete the following table regarding those leak detection and repair procedures. Photocopy this question and complete it separately for each process type.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Equipment Type	Leak Detection Concentration (ppm or mg/m^3) Measured at ____ Inches from Source	Detection Device[1]	Frequency of Leak Detection (per year)	Repairs Initiated (days after detection)	Repairs Completed (days after initiated)
Pump seals					
Packed					
Mechanical					
Double mechanical					
Compressor seals					
Flanges	.005 ppm @ 0-120	POVA	5	≤1	≤1
Valves					
Gas					
Liquid	.005 ppm @ 0-120	POVA	1	≤1	≤1
Pressure relief devices (gas or vapor only)					
Sample connections					
Gas					
Liquid	.005 ppm @ 0-120	POVA	1	≤1	≤1
Open-ended lines					
Gas					
Liquid	.005 ppm @ 0-120	POVA	1	≤1	≤1

[1]Use the following codes to designate detection device:

POVA = Portable organic vapor analyzer
FPM = Fixed point monitoring
O = Other (specify) _____

[ ] Mark (X) this box if you attach a continuation sheet.

[ ] Mark (X) this box if you attach a continuation sheet.

10.16 Raw Material, Intermediate and Product Storage Emissions - - Complete the following table by providing the information on each liquid raw material, intermediate, and product storage vessel containing the listed substance as identified in your process block or residual treatment block flow diagram(s).

CBI

[ ]

Vessel Type[1]	Floating Roof Seals[2]	Composition of Stored Materials[3]	Throughput (liters per year)	Vessel Filling Rate (gpm)	Vessel Filling Duration (min)	Vessel Inner Diameter (m)	Vessel Height (m)	Operating Vessel Volume (l)	Vessel Emission Controls[4]	Design Flow Rate[5]	Vent Diameter (cm)	Control Efficiency (%)	Basis for Estimate[6]
P	N/A	100	751,700	50	143	3.20	3.50	27,000	Adsorber 100	gpm 5.08		95	C
P	N/A	100	128,700	50	88	2.90	3.30	16,650	Adsorber 100	gpm 5.08		95	C

[1]Use the following codes to designate vessel type:

F = Fixed roof
CIF = Contact internal floating roof
NCIF = Noncontact internal floating roof
EFR = External floating roof
P = Pressure vessel (indicate pressure rating)
H = Horizontal
U = Underground

[2]Use the following codes to designate floating roof seals:

MS1 = Mechanical shoe, primary
MS2 = Shoe-mounted secondary
MS2R = Rim-mounted, secondary
LM1 = Liquid-mounted resilient filled seal, primary
LM2 = Rim-mounted shield
LMW = Weather shield
VM1 = Vapor mounted resilient filled seal, primary
VM2 = Rim-mounted secondary
VMW = Weather shield

[3]Indicate weight percent of the listed substance. Include the total volatile organic content in parenthesis

[4]Other than floating roofs

[5]Gas/vapor flow rate the emission control device was designed to handle (specify flow rate units)

[6]Use the following codes to designate basis for estimate of control efficiency:

C = Calculations
S = Sampling

PART E NON-ROUTINE RELEASES

10.23 Indicate the date and time when the release occurred and when the release ceased or was stopped. If there were more than six releases, attach a continuation sheet and list all releases.

None for 1988

Release	Date Started	Time (am/pm)	Date Stopped	Time (am/pm)
1				
2				
3				
4				
5				
6				

10.24 Specify the weather conditions at the time of each release.

N/A

Release	Wind Speed (km/hr)	Wind Direction	Humidity (%)	Temperature (°C)	Precipitation (Y/N)
1					
2					
3					
4					
5					
6					

[ ] Mark (X) this box if you attach a continuation sheet.

APPENDIX I: List of Continuation Sheets

Attach continuation sheets for sections of this form and optional information after this page. In column 1, clearly identify the continuation sheet by listing the question number to which it relates. In column 2, enter the inclusive page numbers of the continuation sheet for each question number.

Question Number (1)	Continuation Sheet Page Numbers (2)
1.04 (Trade Names)	C-1
4.02 (MSDS's)	C-2 - C-113
4.03 (TDI Hazard Infomation)	C-114 - C-156
5.01 - 5.07 (TDI Appendix)	C-157
7.05	C-158 - C-160
7.06	C-161 - C-168
8.05	C-169 - C-170
8.06	C-171 - C-172
9.06	C-173 - C-181
9.07	C-182 - C-190
9.12	C-191 - C-199
9.13	C-200 - C-202
9.14	C-203 - C-211
9.19 - 9.20	C-212

[ ] **Mark (X) this box if you attach a continuation sheet.**

TRADE NAMES

WUC 3104T Iso
WUC 3187T Iso
WUC 3214T Iso
WUC 3246T Iso
Isocyanate 56
Elastopor P 1059U Iso
Elastoflex C 2006U Iso
Elastoflex C 2010U Iso
Elastoflex C 2013U Iso
Elastoflex C 2024U Iso
Elastoflex C 2034U Iso
Elastoflex C 2035U Iso
Elastoflex C 2066U Iso
Elastan 6054U Iso
Elastan 6059U Iso
Elastocast 7050U Iso
PX Iso 1
PX Iso 2
PX Iso 12
PXI SF-52 Iso
PXO 47-03 Iso
PXI 4744-63 Iso
Lupranate 8020
Lupranate 7525
Lupranate T80 Type 3
IX 700 Iso

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 547055 ELASTOFLEX* C2066U Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: ELASTOFLEX* C2066U Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
ELASTOFLEX* C2066U Isocyanate		100	Not established.
Contains:			
Toluene Diisocyanate	584-84-9 91-08-7	>75	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Isocyanate Prepolymer		<25	Not established

All components are in TSCA inventory.
SARA Title III Sect. 313: Listed.

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.01 (TDI)

SPECIFIC GRAVITY OR BULK DENSITY: 1.2

SOLUBILITY IN WATER: Water reacts

APPEARANCE: Lt. Yellow Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200°F PMCT

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters should be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against nitrogen
UNUSUAL FIRE AND EXPLOSION HAZARDS	dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:

ELASTOFLEX* C2066U Isocyanate	RESULT:
Rat, Oral LD50	Severe eye and skin irritant, sensitizer.
Mouse, Inhalation LC50	5.8 g/kg.
	10 ppm/4H

EFFECTS OF OVEREXPOSURE:

The primary routes of exposure to this material are eye or skin contact, and inhalation.
Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment. In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses. TDI was not carcinogenic to rats in a two-year inhalation study. Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Existing medical conditions aggravated by exposure to this material:
Pulmonary disorders.

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY:	Stable.
CONDITIONS TO AVOID:	Temperatures >40°C for extended periods of time.
CHEMICAL INCOMPATIBILITY:	Caustic soda, tertiaryamines and water.
HAZARDOUS DECOMPOSITION PRODUCTS:	TDI vapors, NOx, CO, CO2 and HCN.
HAZARDOUS POLYMERIZATION:	May occur.
CONDITIONS TO AVOID:	Avoid contamination with moisture or other products that react with isocyanates.

CORROSIVE TO METAL:	No	**OXIDIZER:**	No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, apron and boots which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 547055 ELASTOFLEX* C2066U Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm96: 10 ppm-1 ppm.

SPILL AND LEAK PROCEDURES:

LUPRANATE* TM105 Isocyanate is RCRA-Hazardous.
Spills should be contained, solidified and placed in suitable containers for disposal in a RCRA-licensed facility.

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

Incinerate or bury as a solid only in a RCRA-licensed facility.
Do not discharge into waterways or sewer systems.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Empty containers with less than 1 inch of residue may be landfilled at a licensed facility. Recommend crushing or other means to prevent unauthorized reuse. Other containers must be disposed of in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)

Poison B Liquid, NOS

HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)

Yes--TDI

REPORTABLE QUANTITY (RQ) 1.0 lb

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102)
PRIMARY
Poison B

SECONDARY

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate)
UN 2810, RQ 100 Lbs
*** Placarded Poison ***
(Plastic Synthetic Liquid, NOIBN)

CC NO. 217 UN/NA CODE 2810

DATE PREPARED: 4 / 26 / 88 UPDATED: 5 / 1 / 89

WHILE BASF CORPORATION BELIEVES THE DATA SET FORTH HEREIN ARE ACCURATE AS OF THE DATE HEREOF, BASF CORPORATION MAKES NO WARRANTY WITH RESPECT THERETO AND EXPRESSLY DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. SUCH DATA ARE OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION.

SECTION X - PRODUCT LABEL

ELASTOFLEX* C2066U Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0488

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

HMIS: H4 F1 R1

BASF

PRODUCT NUMBER: 547048 WUC 3104T Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: WUC 3104T Isocyanate

CHEMICAL NAME: Toluene Diisocyanate

SYNONYMS: TDI; Tolylene Diisocyanate

FORMULA: $CH_3C_6H_3(NCO)_2$

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: 174.16

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
WUC 3104T Isocyanate Contains: 2,4 Toluene Diisocyanate	584-84-9	100 80	Not established 0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
2,6 Toluene Diisocyanate	91-08-7	20	0.005 ppm NIOSH recommendation; 0.02 ppm STEL
SARA Title III Sect. 313: Listed. All components are in TSCA inventory.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: 484°F/ N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.025	Vapor Density (Air=1): 6.0
SPECIFIC GRAVITY OR BULK DENSITY: 1.22	Freezing Point: 51.8-53.6°F
SOLUBILITY IN WATER: Water reacts	

APPEARANCE: Colorless liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270°F (TAG Open Cup)	AUTOIGNITION TEMP: >620°F

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: 0.9% UPPER: 9.5%

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Personnel engaged in fighting isocyanate fires must be protected against nitrogen dioxide fumes as well as isocyanate vapors. Firefighters must wear self-contained breathing apparatus and turnout gear.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
WUC 3104T Isocyanate	
2,4 Toluene Diisocyanate	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4H

EFFECTS OF OVEREXPOSURE:

The primary routes of exposure to this material are eye or skin contact, and inhalation.
Inhalation of the vapors causes severe irritation to lungs, and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment. In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses. TDI was not carcinogenic to rats in a two-year inhalation study. Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Existing medical conditions aggravated by exposure to this material:
Pulmonary disorders.

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY:	Stable.
CONDITIONS TO AVOID:	Avoid temperatures >104°F for extended periods of time.
CHEMICAL INCOMPATIBILITY:	Water, basic compounds, alcohols, acids, amines.
HAZARDOUS DECOMPOSITION PRODUCTS:	TDI vapors, NOx, CO and HCN.
HAZARDOUS POLYMERIZATION:	May occur.
CONDITIONS TO AVOID:	Avoid contamination with moisture and other products that react with isocyanates.
CORROSIVE TO METAL:	No
OXIDIZER:	No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
NIOSH/MSHA approved respiratory equipment for transfer operations or escape. Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots and rubber apron which must be cleaned after each use. Hardhat for head protection.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L. Vented vapors should be scrubbed through carbon filters or other similar media.

PRODUCT NUMBER: 547048 WUC 3104T Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm-1 ppm.

SPILL AND LEAK PROCEDURES:

WUC 3104T Iso. is a RCRA-regulated product. Wear protective clothing, evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and 2% detergent.

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

Incinerate in a RCRA licensed facility. Do not discharge into waterways or sewer systems without proper authority.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)

Toluene Diisocyanate

HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)

Yes-TDI

REPORTABLE QUANTITY (RQ) 100 lb

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102)

PRIMARY

Poison B

SECONDARY

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	BULK ONLY Poison-2078	TDI

BILL OF LADING DESCRIPTION

Toluene Diisocyanate-Poison B-UN 2078 RQ 100 lbs.
*** Placarded: POISON ***

CC NO. 190

UN/NA CODE 2078

DATE PREPARED: 4 / 14 / 88

UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

WUC 3104T Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0488

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 547087 WUC 3187T Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: WUC 3187T Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
WUC 3187T Isocyanate		100	Not established
Contains:			
Toluene Diisocyanate--TDI	584-84-9 91-08-7	> 6	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Isocyanate Prepolymer		<73	Not established
Naphthenic Petroleum Distillate	64742-53-6	20	350 mg/m3 NIOSH recommend. Or 500 ppm petroleum distillates.
SARA Title III Sect. 313: Listed. All components are in TSCA inventory.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.01

Viscosity@ 77°F :340 cps.

SPECIFIC GRAVITY OR BULK DENSITY: 1.0

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Clear Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200°F PMCT

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 547087 WUC 3187T Isocyanate

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
WUC 3187T Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H
Additive	
Mouse, Inhalation LC50	14400 ppm/7 hr.

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40°C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No | **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 547087 WUC 3187T Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

WUC 3187T Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid NOS	Yes--TDI REPORTABLE QUANTITY (RQ) 1 lb.
D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY Poison B	SECONDARY

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION
Poison B Liquid, NOS (Contains Toluene Diisocyanate) - UN 2810 RQ
Placarded: Poison
(Plastics, Synthetic, Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 1 / 22 / 88 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

WUC 3187T Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0188

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 547088 WUC 3191T Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: WUC 3191T Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
WUC 3191T Isocyanate Contains:		100	Not established
Toluene Diisocyanate--TDI	584-84-9 91-08-7	> 5	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Isocyanate Prepolymer		>70	Not established
Pigment (Blue)		~3	Not established
Additive		>19	Not established
SARA Title III Sect. 313: Listed. All components are in TSCA inventory.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.01

Viscosity@ 77°F : 340 cps.

SPECIFIC GRAVITY OR BULK DENSITY: 1.0

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Blue Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200°F PMCT

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 547088 WUC 3191T Isocyanate

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
WUC 3191T Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H
Additive	
Mouse, Inhalation LC50	14400 ppm/7 hr.

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40°C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: MAY occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No
OXIDIZER: No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 547088 WUC 3191T Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

None available.

SPILL AND LEAK PROCEDURES:

WUC 3191T Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate absorbent and spill area with a mixture of 90% water, 8% ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a licensed facility.
Incinerate or landfill in a licensed facility.
Do not discharge into waterways or sewers.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminate. Decontaminated containers must remain open for at least 48 hours to allow CO2 gas evolved to escape. Drums may then be disposed of in a licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)

Poison B, Liquid NOS

HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)

Yes--TDI

REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102)

PRIMARY
Poison B

SECONDARY

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison B	Poison	

BILL OF LADING DESCRIPTION

Poison B Liquid NOS (Contains Toluene Diisocyanate)--UN 2810 RQ 100 Lbs.
Placarded Poison
(Plastics Synthetic Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 1 / 22 / 88 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

WUC 3191T Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0188

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 547317 WUC 3214T Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: WUC 3214T Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
WUC 3214T Isocyanate		100	Not established
Contains:			
Toluene Diisocyanate--TDI	584-84-9 91-08-7	<20	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Isocyanate Prepolymer	9016-04-3	>80	Not established
All components are in TSCA inventory. SARA Title III Sect. 313: Listed.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.01	Viscosity@ 77°F :1900 cps.
SPECIFIC GRAVITY OR BULK DENSITY: 10.1 lbs/gal	
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Yellow Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200°F PMCT	AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
WUC 3214T Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H

EFFECTS OF OVEREXPOSURE:

The primary routes of exposure to this material are eye or skin contact, and inhalation.
Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment. TDI was carcinogenic to rats and mice in a NTP bioassay; however, it was not carcinogenic to rats in a lifetime inhalation study. TDI is listed in the National Toxicology Program (NTP) Fourth Annual Report on Carcinogens, and the International Agency for Research (IARC) concluded that there is sufficient evidence that TDI is carcinogenic in animals.

FIRST AID PROCEDURES:

Existing medical conditions aggravated by exposure to this material:
Pulmonary conditions

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY:	Stable.
CONDITIONS TO AVOID:	Avoid temperatures >40°C for extended periods of time.
CHEMICAL INCOMPATIBILITY:	Basic compounds, caustic soda, tertiaryamines, water
HAZARDOUS DECOMPOSITION PRODUCTS:	TDI vapors, NOx, CO and HCN.
HAZARDOUS POLYMERIZATION:	May occur.
CONDITIONS TO AVOID:	Avoid contamination with moisture and other products that react with isocyanates.
CORROSIVE TO METAL:	No
OXIDIZER:	No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust to control vapors/mists.

OTHER: Eye wash fountain and safety shower should be readily available.
Maintain work area below P.E.L.

PRODUCT NUMBER: 547317 WUC 3214T Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

WUC 3214T Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid NOS	Yes--TDI REPORTABLE QUANTITY (RQ) 100 lb

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	None

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison " 2810 "	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate)
UN 2810, RQ 100 LBS.
*** Placarded : Poison ***
(Plastic Synthetic Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 8 / 18 / 88 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

WUC 3214T Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
CAS No.: 9016-04-3
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0888

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 547564 WUC 3246T Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: WUC 3246T Isocyanate

CHEMICAL NAME: N/A

SYNONYMS: Isocyanate

FORMULA: Mixture

CHEMICAL FAMILY: Urethane System Isocyanate Comp.

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
WUC 3246T Isocyanate --Proprietary Contains:		100	Not established
Diphenylmethane Diisocyanate--MDI	101-68-8	<20	0.005 ppm ACGIH 0.02 C OSHA (Trans/Final)
Toluene Diisocyanate--TDI	584-84-9 91-08-7	>70	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Isocyanate Prepolymer	9016-87-9	> 5	Not established
All components are in TSCA inventory. SARA Title III Sect. 313: Listed.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: >400°F/ N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: <0.01

SPECIFIC GRAVITY OR BULK DENSITY: 1.22

SOLUBILITY IN WATER: Water reacts

APPEARANCE: Dark liquid ODOR: Aromatic INTENSITY: Slight

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270 F TAG

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: 0.9% UPPER: 9.5%

EXTINGUISHING MEDIUM	Use water fog, alcohol foam or dry chemical extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 547564 WUC 3246T Isocyanate

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
WUC 3246T Isocyanate	
Diphenylmethane Diisocyanate--MDI	Respiratory sensitization possible
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H

EFFECTS OF OVEREXPOSURE:

The primary routes of exposure to this material are eye or skin contact, and inhalation.
Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment. TDI was carcinogenic to rats and mice in a NTP bioassay; however, it was not carcinogenic to rats in a lifetime inhalation study. TDI is listed in the National Toxicology Program (NTP) Fourth Annual Report on Carcinogens, and the International Agency for Research (IARC) concluded that there is sufficient evidence that TDI is carcinogenic in animals.

FIRST AID PROCEDURES:

Existing medical conditions aggravated by exposure to this material:
Pulmonary disorders

FIRST AID PROCEDURES:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40°C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water.

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No | **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
If the P.E.L. for MDI or TDI is exceeded, wear a NIOSH/MSHA approved air-supplied respirator.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust as necessary to maintain P.E.L.

OTHER: Eye wash fountain and safety shower should be readily available.
Maintain work area below P.E.L.

PRODUCT NUMBER: 547564 WUC 3246T Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

None available.

SPILL AND LEAK PROCEDURES:

This is a RCRA-regulated product. Wear protective clothing and all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate (TDI)

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 1

WASTE DISPOSAL METHOD:

absorbent and spill area with a mixture of 90% water, 8% ammonia and 2% detergent. Dispose of waste in a licensed facility. Incinerate in a RCRA licensed facility. Do not discharge into waterways or sewer systems without proper authority.

HAZARDOUS WASTE 40CFR261: No HAZARDOUS WASTE NUMBER:

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminate. Decontaminated containers must remain open for at least 48 hours to allow CO2 gas evolved to escape. Drums may then be disposed of in a licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B Liquid, NOS	Yes - TDI
	REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102)

PRIMARY: Poison B SECONDARY

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison 2801	

BILL OF LADING DESCRIPTION

Posion B Liquid, NOS (Contains Toluene Diisocyanate)
UN 2810, RQ 1 LB
*** Placarded Poison ***
(Plastic Synthetic Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 8 / 15 / 88 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

WUC 3246T Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS No.: 101-68-8; 9016-87-9).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0888

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

HMIS: H4 F1 R1

BASF

PRODUCT NUMBER: 547577 ELASTOPOR* P1059U Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: ELASTOPOR* P1059U Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: Urethane Modified Isocyanate

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
ELASTOPOR* P1059U Isocyanate		100	Not established
Contains--			
2,4 Toluene Diisocyanate	584-84-9	>45	0.005 ppm, ACGIH, 1983 0.02 ppm C OSHA P.E.L.
Isocyanate Prepolymer		>40	Not established
2,6 Toluene Diisocyanate	91-08-7	<15	Not established
All components are in TSCA inventory.			
SARA Title III Sect. 313: Listed.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: 484 F/ N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.025 @ 77 F	Vapor Density (Air=1): 6.0
SPECIFIC GRAVITY OR BULK DENSITY: 1.24	Freezing Point: N/A
SOLUBILITY IN WATER: Water Reacts	Viscosity@ 77 F :270 cps

APPEARANCE: Straw yellow liq. ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270 F TAG Open Cup AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: 0.9% UPPER: 9.5%

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Personnel engaged in fighting isocyanate fires must be protected against nitrogen dioxide fumes as well as isocyanate vapors. Firefighters must wear self-contained breathing apparatus and turnout gear.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 547577 ELASTOPOR* P1059U Isocyanate

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA: **RESULT:**

ELASTOPOR* P1059U Isocyanate 2,4 Toluene Diisocyanate	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4H

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs, and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment. TDI was carcinogenic to rats and mice in a NTP bioassay; however, it was not carcinogenic to rats in a lifetime inhalation study. TDI is listed in the National Toxicology Program (NTP) Fourth Annual Report on Carcinogens, and the International Agency for Research (IARC) concluded that there is sufficient evidence that TDI is carcinogenic in animals.
Existing medical conditions aggravated by exposure to this material:
Pulmonary disorders.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur. Avoid contamination with moisture
CONDITIONS TO AVOID: and other products that react with isocyanates.

CORROSIVE TO METAL: No **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Chemical goggles; also wear a face shield if splashing hazard exists.

PROTECTIVE CLOTHING: Gloves and protective clothing as necessary to minimize skin contact.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Eye wash fountain and safety shower should be readily available.

PRODUCT NUMBER: 547577 ELASTOPOR* P1059U Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

This is a RCRA-regulated product. Wear protective clothing. evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and 2% detergent. Dispose of

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

waste in a RCRA-permitted facility.
Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B Liquid, NOS	Yes-TDI REPORTABLE QUANTITY (RQ) 1 lb

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102)

PRIMARY: Poison

SECONDARY: None

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison "2810"	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS-(Contains Toluene Diisocyanate)
UN 2810, RQ 1 LB.
*** Placarded: Poison ***
(Plastic, Synthetic, Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 4 / 5 / 89 UPDATED: 4 / 5 / 89

SECTION X - PRODUCT LABEL

ELASTOPOR* P1059U Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin and clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0489

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 564480 ELASTOFLEX* C2013U Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: ELASTOFLEX* C2013U Isocyanate	
CHEMICAL NAME: Isocyanate Prepolymer	
SYNONYMS: TDI Prepolymer	FORMULA: Mixture
CHEMICAL FAMILY: Aromatic Isocyanates	MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
ELASTOFLEX* C2013U Isocyanate		100	Not established
Contains:			
Toluene Diisocyanate--TDI	584-84-9 91-08-7	60	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Diphenylmethane Diisocyanate--MDI	101-68-8 9016-87-9	40	0.005 ppm ACGIH 0.02 ppm C OSHA Trans/Final
SARA Title III Sect. 313: Listed. All components are in TSCA inventory.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.01 (TDI)	Viscosity@ 77 F :250 cps.
SPECIFIC GRAVITY OR BULK DENSITY: 10.3 lbs/gal	
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Dark Brown Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200 F PMCT	AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 564480 ELASTOFLEX* C2013U Isocyanate

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
583008FLEX* C2013U Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H
Diphenylmethane Diisocyanate--MDI	Respiratory sensitization possible

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No
OXIDIZER: No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 564480 ELASTOFLEX* C2013U Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

ELASTOFLEX* C2013U Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid NOS	Yes--TDI REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate) - UN 2810 RQ
Placarded Poison
(Plastic Synthetic Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 4 / 11 / 86 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

ELASTOFLEX* C2013U Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS Nos.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS Nos.:101-68-8;9016-87-9).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0987

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 583008 ELASTOFLEX* C2006U Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: ELASTOFLEX* C2006U Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
ELASTOFLEX* C2006U Isocyanate		100	Not established
Contains:			
Toluene Diisocyanate--TDI	584-84-9 91-08-7	>50	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Isocyanate Prepolymer		<50	Not established
All components are in TSCA inventory. SARA Title III Sect. 313: Listed.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.01	Viscosity@ 77 F :948 cps.
SPECIFIC GRAVITY OR BULK DENSITY: 1.1	
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Clear Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200 F PMCT AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA: **RESULT:**

ELASTOFLEX* C2006U Isocyanate

Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 583008 ELASTOFLEX* C2006U Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

ELASTOFLEX* C2006U Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid NOS	Yes--TDI REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION
Poison B Liquid, NOS (Contains Toluene Diisocyanate) - UN 2810 RQ
Placarded: Poison
(Plastics, Synthetic, Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 4 / 11 / 86 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

ELASTOFLEX* C2006U ISOCYANATE

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0887

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

HMIS: H4 F1 R1

BASF

PRODUCT NUMBER: 583222 No. 56 Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: NO. 56 Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: Urethane Modified Isocyanate

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
NO. 56 Isocyanate		100	Not established
Contains:			
Isocyanate Prepolymer		<20	Not established
2,4 Toluene Diisocyanate	584-84-9	<55	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Polymethylene Polyphenylene Polyisocyanate	9016-87-9	<10	Not established Not established
2,6 Toluene Diisocyanate	91-08-7	<15	Not established
Diphenylmethane Diisocyanate	101-68-8	<10	0.005 ppm, ACGIH 0.02 ppm C OSHA Trans/Final

SARA Title III Sect. 313: Listed.
All components are in TSCA inventory.

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: 484°F/ N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.025 @ 77°F

Vapor Density (Air=1): 6.0

SPECIFIC GRAVITY OR BULK DENSITY: 1.22

Freezing Point: N/A

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Brown Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270°F TAG Open Cup

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: 0.9% UPPER: 9.5%

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Personnel engaged in fighting isocyanate fires must be protected against nitrogen dioxide fumes as well as isocyanate vapors. Firefighters must wear self-contained breathing apparatus and turnout gear.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
NO. 56 Isocyanate 2,4 Toluene Diisocyanate	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4H
Diphenylmethane Diisocyanate	Respiratory sensitization possible

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs, and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40°C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur. Avoid contamination with moisture
CONDITIONS TO AVOID: and other products that react with isocyanates.

CORROSIVE TO METAL: No **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 583222 No. 56 Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

This is a RCRA-regulated product. Wear protective clothing, evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and 2% detergent.

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

Incinerate in a RCRA licensed facility. Do not discharge into waterways or sewer systems without proper authority.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid NOS	TDI
	REPORTABLE QUANTITY (RQ) 1.0 lb

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION
Poison B, Liquid NOS (Contains Toluene Diisocyanate) UN2810

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 11 / 12 / 86 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

No. 56 Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS Nos.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS Nos.: 101-68-8;9016-87-9).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0987

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 583238 ELASTOFLEX* C2024U Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: ELASTOFLEX* C2024U Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
ELASTOFLEX* C2024U Isocyanate	2	100	Not established
Contains: Toluene Diisocyanate--TDI	584-84-9 91-08-7	<50	0.005 ppm; 002 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Isocyanate Prepolymer		>25	Not established
Diphenylmethane Diisocyanate--MDI	101-68-8	<25	0.005 ppm, ACGIH 0.02 ppm C OSHA Trans/Final
SARA Title III Sect. 313: Listed. All components are in TSCA inventory.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.01 (TDI)

Viscosity@ 77 F : 48 cps.

SPECIFIC GRAVITY OR BULK DENSITY: 1.22

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Dark Brown Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200 F PMCT

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
583307FLEX* C2024U Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H
Diphenylmethane Diisocyanate--MDI	Respiratory sensitization possible

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No | **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 583238 ELASTOFLEX* C2024U Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

ELASTOFLEX* C2024U Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid NOS	Yes--TDI REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate) - UN 2810 RQ
Placarded Poison
(Plastic Synthetic Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 4 / 11 / 86 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

ELASTOFLEX* C2024U Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS Nos.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS No.: 101-68-8).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0987

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 583307 ELASTOFLEX* C2034U Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: ELASTOFLEX* C2034U Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
ELASTOFLEX* C2034U Isocyanate		100	Not established
Contains:			
Toluene Diisocyanate--TDI	584-84-9 91-08-7	>30	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Isocyanate Prepolymer		<70	Not established
SARA Title III Sect. 313: Listed. All components are in TSCA inventory.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.01	Viscosity@ 77 F :1500 cps.
SPECIFIC GRAVITY OR BULK DENSITY: 1.1	Density @ 77 F: 10.2 lbs/gal
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Clear Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200 F PMCT AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
ELASTOFLEX* C2034U Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY:	Stable.
CONDITIONS TO AVOID:	Avoid temperatures >40 C for extended periods of time.
CHEMICAL INCOMPATIBILITY:	Basic compounds, caustic soda, tertiaryamines, water
HAZARDOUS DECOMPOSITION PRODUCTS:	TDI vapors, NOx, CO and HCN.
HAZARDOUS POLYMERIZATION:	Does not occur
CONDITIONS TO AVOID:	Avoid contamination with moisture and other products that react with isocyanates.
CORROSIVE TO METAL:	No
OXIDIZER:	No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 583307 ELASTOFLEX* C2034U Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

ELASTOFLEX* C2034U Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid NOS	Yes--TDI
	REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate) - UN 2810 RQ
Placarded: Poison
(Plastics, Synthetic, Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 4 / 8 / 86 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

ELASTOFLEX* C2034U Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0887

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 583663 ELASTOFLEX* C2035U Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: ELASTOFLEX* C2035U Isocyanate

CHEMICAL NAME: Toluene Diisocyanate

SYNONYMS: TDI; Tolylene Diisocyanate

FORMULA: $CH_3C_6H_3(NCO)2$

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: 174.16

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
ELASTOFLEX* C2035U Isocyanate		100	Not established
2,4 Toluene Diisocyanate	584-84-9	80	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
2,6 Toluene Diisocyanate	91-08-7	20	0.005 ppm; 0.02 ppm STEL NIOSH recommendation
SARA Title III Sect. 313: Listed. All components are in TSCA inventory.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: 484 F/ N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.01	Vapor Density (Air=1): 6.0
SPECIFIC GRAVITY OR BULK DENSITY: 1.22	Freezing Point: 51.8-53.6 F
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Colorless liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270 F TAG Open Cup AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: 0.9% UPPER: 9.5%

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Personnel engaged in fighting isocyanate fires must be protected against nitrogen dioxide fumes as well as isocyanate vapors. Firefighters must wear self-contained breathing apparatus and turnout gear.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 583663 ELASTOFLEX* C2035U Isocyanate

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
ELASTOFLEX* C2035U ISOCYANATE	
2,4 Toluene Diisocyanate	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4H

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs, and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes--Flush eyes with flowing water for at least 15 minutes
If irritation develops, consult a physician.
Skin--Wash affected skin areas thoroughly with soap and water.
Remove clothing and launder contaminated clothing before reuse. If irritation develops, consult a physician.
Ingestion--If swallowed, dilute with water.
Do NOT induce vomiting.
Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Get medical attention immediately.
Inhalation--If inhaled, move to fresh air. Aid in breathing if necessary, and get medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No | **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 583663 ELASTOFLEX* C2035U Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

This is a RCRA-regulated product. Wear protective clothing, evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and 2% detergent. Dispose of

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

waste in a RCRA-permitted facility.
Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)

Toluene Diisocyanate

HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)

Yes- TDI

REPORTABLE QUANTITY (RQ) 100 lb

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102)

PRIMARY
Poison B

SECONDARY
None

D.O.T. LABELS REQUIRED (49CFR172.101-102)

Poison

D.O.T. PLACARDS REQUIRED (CFR172.504)

Poison
2078

POISON CONSTITUENT (49CFR172.203(K))

TDI

BILL OF LADING DESCRIPTION

Toluene Diisocyanate--
Poison B
UN 2078, RQ 100 LBS
*** Placarded Poison ***

CC NO. 190

UN/NA CODE 2078

DATE PREPARED: 4 / 11 / 86

UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

ELASTOFLEX* C2035U Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Toluene Diisocyanate - UN 2078 RQ
Made in USA.
Polymers
0289

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

H,4: F,1: R,1

PRODUCT NUMBER: 583683 LUPRANATE* 8020

SECTION I

*Registered Trademark

TRADE NAME: LUPRANATE* 8020

CHEMICAL NAME: Toluene Diisocyanate/ Polymethylene Polyphenylisocyanate

SYNONYMS: TDI/MDI Blend

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
LUPRANATE* 8020		100	Not established
Contains:			
2,4 Toluene Diisocyanate	584-84-9	<70	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm OSHA (Trans)
2,6 Toluene Diisocyanate	91-08-7	<20	0.005 ppm; 0.02 ppm STEL NIOSH recommendation
Diphenylmethane Diisocyanate	101-68-8	<10	0.005 ppm, ACGIH 0.02 ppm C OSHA Trans/Final
Polymethylene Polyphenylene Polyisocyanate	9016-87-9	<10	Not established
	N/A	N/A	Not established
SARA Title III Sect. 313: Listed. All components are in TSCA inventory.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: >400°F/ N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.01	Vapor Density (Air=1): 6.0
SPECIFIC GRAVITY OR BULK DENSITY: 1.22	Freezing Point: 51.8-53.6°F
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Dark Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270°F TAG Open Cup (TDI) AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: 0.9% UPPER: 9.5%

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Personnel engaged in fighting isocyanate fires must be protected against nitrogen dioxide fumes as well as isocyanate vapors. Firefighters must wear self-contained
UNUSUAL FIRE AND EXPLOSION HAZARDS	breathing apparatus and turnout gear. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 · 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
LUPRANATE* 8020	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer.
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4H
Diphenylmethane Diisocyanate	Respiratory sensitization possible.

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs, and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses. TDI was not carcinogenic to rats in a two-year inhalation study. Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40°C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No | **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape. Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 583683 LUPRANATE* 8020

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm

SPILL AND LEAK PROCEDURES:

LUPRANATE* 8020 is a RCRA-regulated product. Wear protective clothing. Evacuate all personnel not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open-top drums. Decontaminate absorbent and spill area with a mixture of 90% water, 8% concentrated ammonia, and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of solidified waste in a RCRA-permitted facility.

Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B Liquid, NOS	Yes--TDI REPORTABLE QUANTITY (RQ) 100 lb

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate)--UN 2810 RQ 100 LBS.
*** PLACARDED: POISON ***
(PLASTICS, SYNTHETIC, LIQUID, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 4 / 17 / 86 UPDATED: 4 / 21 / 89

SECTION X - PRODUCT LABEL

LUPRANATE* 8020

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS Nos.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS Nos.: 101-68-8; 9016-87-9).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0887

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

HMIS: H4 F1 R1

BASF

PRODUCT NUMBER: 583721 LUPRANATE* 7525

SECTION I

*Registered Trademark

TRADE NAME: LUPRANATE* 7525

CHEMICAL NAME: Toluene Diisocyanate/Polymethylene Polyphenylisocyanate

SYNONYMS: TDI/MDI Blend

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
LUPRANATE* 7525		100	Not established
Contains:			
2,4 Toluene Diisocyanate	584-84-9	<50	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final)
2,6 Toluene Diisocyanate	91-08-7	>10	0.005 ppm; 0.02 ppm STEL NIOSH recommendation
Diphenylmethane Diisocyanate	101-68-8	<20	0.005 ppm, ACGIH 0.02 ppm C OSHA Trans/Final
Polymethylene Polyphenylene Polyisocyanate	9018-87-9 N/A	<20 N/A	Not established Not established

All components are in TSCA inventory.
SARA Title III Sect. 313: Listed.

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: >400°F/ N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.01	Vapor Density (Air=1): 6.0
SPECIFIC GRAVITY OR BULK DENSITY: 1.22	Freezing Point: 51.8-53.6°F
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Dark Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270°F TAG Open Cup (TDI) AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: 0.9% UPPER: 9.5%

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Personnel engaged in fighting isocyanate fires must be protected against nitrogen dioxide fumes as well as isocyanate vapors. Firefighters must wear self-contained breathing apparatus and turnout gear.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
LUPRANATE* 7525	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer.
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4H
Diphenylmethane Diisocyanate	Respiratory sensitization possible

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs, and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses. TDI was not carcinogenic to rats in a two-year inhalation study. Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY:	Stable.
CONDITIONS TO AVOID:	Avoid temperatures >40°C for extended periods of time.
CHEMICAL INCOMPATIBILITY:	Basic compounds, caustic soda, tertiaryamines, water
HAZARDOUS DECOMPOSITION PRODUCTS:	TDI vapors, NOx, CO and HCN.
HAZARDOUS POLYMERIZATION:	May occur.
CONDITIONS TO AVOID:	Avoid contamination with moisture and other products that react with isocyanates.
CORROSIVE TO METAL: No	OXIDIZER: No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape. Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 583721 LUPRANATE* 7525

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm

SPILL AND LEAK PROCEDURES:

LUPRANATE* 7525 is a RCRA-regulated product. Wear protective clothing. Evacuate all personnel not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open-top drums. Decontaminate absorbent and spill area with a mixture of 90% water, 8% concentrated ammonia, and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of solidified waste in a RCRA-permitted facility. Incinerate or bury as a solid after absorption or cementation in a licensed facility. Do not discharge into waterways or sewer systems.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)

Poison B Liquid, NOS

HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)

Yes--TDI

REPORTABLE QUANTITY (RQ) 100 lb

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102)

PRIMARY: Poison B

SECONDARY:

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate)--UN 2810 RQ 100 LBS.
*** PLACARDED: POISON ***
(PLASTICS, SYNTHETIC, LIQUID, NOIBN)

CC NO. 217 UN/NA CODE 2810

DATE PREPARED: 4 / 21 / 86 UPDATED: 4 / 21 / 89

SECTION X - PRODUCT LABEL

LUPRANATE* 7525

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS Nos.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS Nos.: 101-68-8; 9016-87-9).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0887

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 584744 **ELASTOCAST* 7050U Isocyanate**

SECTION I

*Registered Trademark

TRADE NAME: ELASTOCAST* 7050U Isocyanate

CHEMICAL NAME: N/A

SYNONYMS: Isocyanate

FORMULA: Mixture

CHEMICAL FAMILY: Urethane System Isocyanate Comp.

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
ELASTOCAST* 7050U Isocyanate --Proprietary		100	Not established
Contains:			
Diphenylmethane Diisocyanate--MDI	101-68-8	<70	0.005 ppm, ACGIH 0.02 ppm C OSHA Trans/Final
Toluene Diisocyanate--TDI	584-84-9 91-08-7	< 1	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm OSHA (Trans)
Isocyanate Prepolymer		>30	Not established
All components are in TSCA inventory. SARA Title III Sect. 313: Listed.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: >400 F/ N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: <.01	Viscosity@ 77 F :2250 cps.
SPECIFIC GRAVITY OR BULK DENSITY: 9.58 lbs/gal	
SOLUBILITY IN WATER: Water reacts	

APPEARANCE: Liquid ODOR: Aromatic INTENSITY: Slight

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >400 F PMCT	AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: 0.9% UPPER: 9.5%

EXTINGUISHING MEDIUM	Use water fog, alcohol foam or dry chemical extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
ELASTOCAST* 7050U Isocyanate	
Diphenylmethane Diisocyanate--MDI	Respiratory sensitization possible
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water.

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No
OXIDIZER: No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
If the exposure level (P.E.L.) for MDI is exceeded, wear a NIOSH-approved air-supplied respirator.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust as necessary to maintain P.E.L.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 584744 ELASTOCAST* 7050U Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

None available.

SPILL AND LEAK PROCEDURES:

ELASTOCAST* 7050U Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate (TDI)

HAZARDOUS SUBSTANCE SUPERFUND: Yes **RQ (lbs):** 1

WASTE DISPOSAL METHOD:

absorbent and spill area with a mixture of 90% water, 8% ammonia and 2% detergent. Dispose of waste in a licensed facility. Incinerate in a RCRA licensed facility. Do not discharge into waterways or sewer systems without proper authority.

HAZARDOUS WASTE 40CFR261: No **HAZARDOUS WASTE NUMBER:**

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminate. Decontaminated containers must remain open for at least 48 hours to allow CO2 gas evolved to escape. Drums may then be disposed of in a licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B Liquid, NOS	Yes - TDI REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison B-UN 2810	

BILL OF LADING DESCRIPTION

Posion B Liquid, NOS (Contains Toluene Diisocyanate) - UN 2810 RQ
Placarded Poison
(Plastics Synthetic Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 4 / 11 / 86 **UPDATED:** 4 / 24 / 89

SECTION X - PRODUCT LABEL

ELASTOCAST* 7050U Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS Nos.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS Nos.:101-68-8;9016-87-9).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
1187

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 584780 ELASTAN* 6054U Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: ELASTAN* 6054U Isocyanate

CHEMICAL NAME: N/A

SYNONYMS: Isocyanate

FORMULA: Mixture

CHEMICAL FAMILY: Urethane System Isocyanate Comp.

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
ELASTAN* 6054U Isocyanate --Proprietary		100	Not established
Contains: Diphenylmethane Diisocyanate--MDI	101-68-8	>25	0.005 ppm, ACGIH 0.02 ppm C OSHA Trans/Final
Toluene Diisocyanate--TDI	584-84-9 91-08-7	< 2	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm OSHA (Trans)
Isocyanate Prepolymer		>73	Not established
All components are in TSCA inventory. SARA Title III Sect. 313: Listed.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: >400°F/ N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: <0.01

Viscosity@ 77°F :2825 cps.

SPECIFIC GRAVITY OR BULK DENSITY: 8.99 lbs/gal

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Yellow Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200°F PMCT

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
ELASTAN* 6054U Isocyanate	
Diphenylmethane Diisocyanate--MDI	Respiratory sensitization possible
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H

EFFECTS OF OVEREXPOSURE:

The primary routes of exposure to this material are eye or skin contact, and inhalation.
Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment. In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses. TDI was not carcinogenic to rats in a two-year inhalation study. Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Existing medical conditions aggravated by exposure to this material:
Pulmonary disorders.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40°C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: void contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No
OXIDIZER: No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 584780 ELASTAN* 6054U Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

None available.

SPILL AND LEAK PROCEDURES:

ELASTAN* 6054U Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate (TDI)

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

absorbent and spill area with a mixture of 90% water, 8% ammonia and 2% detergent. Dispose of waste in a licensed facility.
Incinerate or landfill in a licensed facility.
Do not discharge into waterways or sewers.

HAZARDOUS WASTE 40CFR261: No HAZARDOUS WASTE NUMBER:

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminate. Decontaminated containers must remain open for at least 48 hours to allow CO2 gas evolved to escape. Drums may then be disposed of in a licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B Liquid, NOS	Yes--TDI
	REPORTABLE QUANTITY (RQ) 100

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	None

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Bulk Only " 2810 "	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate)
UN 2810, RQ 100 Lbs.
*** Placarded Poison ***
(Plastic, Synthetic Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810
DATE PREPARED: 4 / 11 / 86	UPDATED: 4 / 24 / 89

SECTION X - PRODUCT LABEL

ELASTAN* 6054U Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS No.: 101-68-8).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0588

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 585068 IX 700 Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: IX 700 Isocyanate

CHEMICAL NAME: N/A

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
IX 700 Isocyanate		100	Not established
Contains:			
Toluene Diisocyanate--TDI	584-84-9 91-08-7	25	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm OSHA (Trans)
Diphenylmethane Diisocyanate--MDI	101-68-8 9016-87-9	25	0.005 ppm ACGIH 0.02 ppm C OSHA Trans/Final
Isocyanate Prepolymer		50	Not established

All components are in TSCA inventory.
SARA Title III Sect. 313: Listed.

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.01 (TDI)

Viscosity@ 77 F :250 cps.

SPECIFIC GRAVITY OR BULK DENSITY: 10.3 lbs/gal

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Amber Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200 F PMCT

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 585068 IX 700 Isocyanate

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
IX 700 Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H
Diphenylmethane Diisocyanate--MDI	Respiratory sensitization possible

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No | **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 585068 IX 700 Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

IX 700 Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid NOS	Yes--TDI
	REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate) - UN 2810 RQ
Placarded Poison
(Plastic Synthetic Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 12 / 4 / 86 UPDATED: 4 / 25 / 89

SECTION X - PRODUCT LABEL

IX 700 Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS Nos.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS Nos.: 101-68-8;9016-87-9).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0987

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

HMIS: H4 F1 R1

BASF

PRODUCT NUMBER: 585363 PXI 4744-63 Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: PXI 4744-63 Isocyanate

CHEMICAL NAME: N/A

SYNONYMS: TDI Prepolymer

FORMULA: N/A

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
PXI 4744-63 Isocyanate		100	Not established
Contains:			
Toluene Diisocyanate--TDI	584-84-9 91-08-7	>50	0.005 ppm ACGIH, 1983 0.02 ppm Ceiling OSHA PEL
Isocyanate Prepolymer		>25	Not established
Diphenylmethane Diisocyanate--MDI	101-68-8	<25	0.005 ppm, ACGIH 0.02 ppm Ceiling, OSHA

All components are in TSCA inventory.
SARA Title III Sect. 313: Listed.

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.01 (TDI)

Viscosity@ 77 F : 48 cps.

SPECIFIC GRAVITY OR BULK DENSITY: 1.22

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Dark Brown Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200 F PMCT

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
PXI 4744-63 Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H
Diphenylmethane Diisocyanate--MDI	Respiratory sensitization possible

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No | **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 585363 PXI 4744-63 Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

PXI 4744-63 Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid NOS	Yes--TDI REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate) - UN 2810 RQ
Placarded Poison
(Plastic Synthetic Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 12 / 4 / 86 UPDATED: 3 / 14 / 89

SECTION X - PRODUCT LABEL

PXI 4744-63 Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS Nos.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS No.: 101-68-8).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

HMIS: H4 F1 R1
FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0389

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 585386 PXI SF-52 Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: PXI SF-52 Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
PXI SF-52 Isocyanate		100	Not established
Contains:			
Toluene Diisocyanate--TDI	584-84-9 91-08-7	<50	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Isocyanate Prepolymer		>50	Not established
All components are in TSCA inventory. SARA Title III Sect. 313: Listed.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.01 (TDI)	
SPECIFIC GRAVITY OR BULK DENSITY: 1.2	
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200 F PMCT AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 585386 PXI SF-52 Isocyanate

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
PXI SF-52 Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines,water.

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No
OXIDIZER: No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 585386 PXI SF-52 Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

PXI SF-52 Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)

Poison B, Liquid NOS

HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)

Toluene Diisocyanate

REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102)

PRIMARY
Poison B

SECONDARY

D.O.T. LABELS REQUIRED (49CFR172.101-102)

Poison

D.O.T. PLACARDS REQUIRED (CFR172.504)
Bulk Only
POISON-2810

POISON CONSTITUENT (49CFR172.203(K))
Toluene
Diisocyanate

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate) - UN 2810 RQ
Placarded: Poison
(Plastics, Synthetic, Liquid, NOIBN)

CC NO. 217

UN/NA CODE 2810

DATE PREPARED: 7 / 16 / 86

UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

PXI SF-52 Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS Nos.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0887

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 585410 PXO 47-03 Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: PXO 47-03 Isocyanate

CHEMICAL NAME: N/A

SYNONYMS: TDI/MDI Blend

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
PXO 47-03 Isocyanate Contains:		100	Not established
Toluene Diisocyanate--TDI	584-84-9 91-08-7	80	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Diphenylmethane Diisocyanate	101-68-8 9016-87-9	20	0.005 ppm, ACGIH 0.02 ppm C OSHA Trans/Final
All components are in TSCA inventory. SARA Title III Sect. 313: Listed.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: >400 F/ N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.01

Vapor Density (Air=1): 6.0

SPECIFIC GRAVITY OR BULK DENSITY: 1.22

Freezing Point: 51.8-53.6 F

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Dark Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270 F TAG Open Cup (TDI)

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: 0.9% UPPER: 9.5%

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Personnel engaged in fighting isocyanate fires must be protected against nitrogen dioxide fumes as well as isocyanate vapors. Firefighters must wear self-contained
UNUSUAL FIRE AND EXPLOSION HAZARDS	breathing apparatus and turnout gear. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
PXO 47-03 Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant and sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4H
Diphenylmethane Diisocyanate	Respiratory sensitization possible

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs, and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses. TDI was not carcinogenic to rats in a two-year inhalation study. Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines,water.

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape. Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 585410 PXO 47-03 Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm

SPILL AND LEAK PROCEDURES:

PXO 47-03 Iso is a RCRA-regulated product. Wear protective clothing. Evacuate all personnel not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open-top drums. Decontaminate absorbent and spill area with a mixture of 90% water, 8% concentrated ammonia, and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of solidified waste in a RCRA-permitted facility. Incinerate or bury as a solid after absorption or cementation in a licensed facility. Do not discharge into waterways or sewer systems.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B Liquid, NOS	Yes--TDI REPORTABLE QUANTITY (RQ) 1.0 lb

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Bulk Only Poison-2810	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate) - UN 2810 RQ
Placarded Poison
(Plastic Synthetic Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 10 / 6 / 86 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

PXO 47-03 Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS Nos.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS Nos.: 101-68-8;9016-87-9).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0987

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 585531 TDI Based Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: TDI Based Isocyanate

CHEMICAL NAME: N/A

SYNONYMS: TDI/MDI Blend

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
TDI Based Isocyanate		100	Not established
Contains:			
Toluene Diisocyanate--TDI	584-84-9 91-08-7	<10	0.005 ppm ACGIH 1983 0.02 ppm OSHA PEL
Diphenylmethane Diisocyanate	101-68-8 9016-87-9	>40	0.005 ppm, ACGIH 0.02 ppm ceiling, OSHA
Isocyanate Prepolymer	Proprietary	>50	Not established

All components are in TSCA inventory.
SARA Title III Sect. 313: Listed.

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: >400°F/ N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.01

Vapor Density (Air=1): 6.0

SPECIFIC GRAVITY OR BULK DENSITY: 1.22

Freezing Point: 51.8-53.6°F

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Dark Liquid **ODOR:** Pungent **INTENSITY:** Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270°F TAG Open Cup (TDI)

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) **LOWER:** 0.9% **UPPER:** 9.5%

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Personnel engaged in fighting isocyanate fires must be protected against nitrogen dioxide fumes as well as isocyanate vapors. Firefighters must wear self-contained breathing apparatus and turnout gear.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
TDI Based Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer.
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4H
Diphenylmethane Diisocyanate	Respiratory sensitization possible

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs, and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY:	Stable.
CONDITIONS TO AVOID:	Avoid temperatures >40°C for extended periods of time.
CHEMICAL INCOMPATIBILITY:	Basic compounds, caustic soda, tertiaryamines, water
HAZARDOUS DECOMPOSITION PRODUCTS:	TDI vapors, NOx, CO and HCN.
HAZARDOUS POLYMERIZATION:	May occur.
CONDITIONS TO AVOID:	Avoid contamination with moisture and other products that react with isocyanates.
CORROSIVE TO METAL:	No
OXIDIZER:	No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape. Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Chemical goggles; also wear a face shield if splashing hazard exists.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust to control vapors/mists.

OTHER: Eye wash fountain and safety shower should be readily available.
Maintain work area below P.E.L. C-87

PRODUCT NUMBER: 585531 TDI Based Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm-1 ppm.

SPILL AND LEAK PROCEDURES:

TDI Based Iso is a RCRA-regulated product. Wear protective clothing. Evacuate all personnel not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open-top drums. Decontaminate absorbent and spill area with a mixture of 90% water, 8% concentrated ammonia, and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of solidified waste in a RCRA-permitted facility. Incinerate or bury as a solid after absorption or cementation in a licensed facility. Do not discharge into waterways or sewer systems.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B Liquid, NOS	Yes--TDI REPORTABLE QUANTITY (RQ) 100 lb
D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY Poison B	SECONDARY

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION
Poison B Liquid, NOS (Contains Toluene Diisocyanate)
UN 2810, RQ 100 Lbs
*** Placarded Poison ***
(Plastic Synthetic Liquid NOIBN)

CC NO. 217	UN/NA CODE 2810
DATE PREPARED: 4 / 26 / 88	UPDATED: 12 / 5 / 88

SECTION X - PRODUCT LABEL

TDI Based Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS No.: 101-68-8;9016-87-9).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0488

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 585534 ELASTAN* 6059U Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: ELASTAN* 6059U Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer | FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates | MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
ELASTAN* 6059U Isocyanate		100	Not established
Contains:			
Toluene Diisocyanate--TDI	584-84-9 91-08-7	50	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
Isocyanate Prepolymer		50	Not established
All components are in TSCA inventory. SARA Title III Sect. 313: Listed.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.01	
SPECIFIC GRAVITY OR BULK DENSITY: 1.22	
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Clear Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200°F PMCT | AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
ELASTAN* 6059U Isocyanate	
Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs and pulmonary edema can occur after a serious vapor exposure.
Liquid contact causes serious skin and eye burns.
Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing.
Preclude from exposure to those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization.
Recent studies indicate that overexposure may be associated with chronic lung impairment.
In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses.
TDI was not carcinogenic to rats in a two-year inhalation study.
Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40°C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds,caustic soda,tertiaryamines,water.

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No
OXIDIZER: No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Chemical goggles; also wear a face shield if splashing hazard exists.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Local exhaust to control to recommended P.E.L.

OTHER: Eyewash fountains and safety showers should be easily accessible.

PRODUCT NUMBER: 585534 ELASTAN* 6059U Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm-1 ppm.

SPILL AND LEAK PROCEDURES:

ELASTAN* 6059U Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid NOS	Yes--TDI REPORTABLE QUANTITY (RQ) 100

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS (Contains Toluene Diisocyanate) - UN 2810 RQ
Placarded: Poison
(Plastics, Synthetic, Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 2 / 10 / 88 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

ELASTAN* 6059U Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0288

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

HMIS: H4 F1 R1

BASF

PRODUCT NUMBER: 585823 LUPRANATE* T80-Type 3

SECTION I

*Registered Trademark

TRADE NAME:	LUPRANATE* T80-Type 3
CHEMICAL NAME:	Toluene Diisocyanate
SYNONYMS:	TDI; Tolylene Diisocyanate
FORMULA:	$CH_3C_6H_3(NCO)_2$
CHEMICAL FAMILY:	Aromatic Isocyanates
MOL. WGT.:	174.16

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
LUPRANATE* T80-Type 3 Contains:		100	Not established
2,4 Toluene Diisocyanate	584-84-9	80	0.005 ppm ACGIH 0.02 ppm OSHA Ceiling 0.02 ppm STEL ACGIH
2,6 Toluene Diisocyanate	91-08-7	20	
SARA Title III Sect. 313: Listed. All components are in TSCA inventory.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: 484°F/ N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.01	Vapor Density (Air=1): 6.0
SPECIFIC GRAVITY OR BULK DENSITY: 1.22	Freezing Point: 51.8-53.6°F
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Colorless liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270°F TAG Open Cup	AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: 0.9% UPPER: 9.5%

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Personnel engaged in fighting isocyanate fires must be protected against nitrogen dioxide fumes as well as isocyanate vapors. Firefighters must wear self-contained breathing apparatus and turnout gear.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 585623 LUPRANATE* T80-Type 3

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
LUPRANATE* T80-Type 3	
2,4 Toluene Diisocyanate	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4H

EFFECTS OF OVEREXPOSURE:

The primary routes of exposure to this material are eye or skin contact, and inhalation.
Inhalation of the vapors causes severe irritation to lungs, and pulmonary edema can occur after a serious vapor exposure. Liquid contact causes serious skin and eye burns. Pulmonary sensitization can occur in some individuals leading to asthma-type spasms of the bronchial tubes and difficulty in breathing. Preclude from exposure those individuals having a history of respiratory illness, asthmatic conditions, eye damage or TDI sensitization. Recent studies indicate that overexposure may be associated with chronic lung impairment. In a National Toxicology Program (NTP) study, TDI was carcinogenic when given orally to rats and mice at maximum tolerated doses. TDI was not carcinogenic to rats in a two-year inhalation study. Based on the results of the oral study, TDI was included in the NTP Annual Report on Carcinogens.

FIRST AID PROCEDURES:

Existing medical conditions aggravated by exposure to this material:
Pulmonary disorders

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40°C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: void contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 585623 LUPRANATE* T80-Type 3

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

LUPRANATE* T80-Type 3 is a RCRA regulated product. Wear protective clothing evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and 2% detergent. Dispose of

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

waste in a RCRA-permitted facility.
Incinerate in a RCRA licensed facility. Do not discharge into waterways or sewer systems without proper authority.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Toluene Diisocyanate	Yes--TDI REPORTABLE QUANTITY (RQ) 100 lb

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	None

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	BULK ONLY Poison-2078	TDI

BILL OF LADING DESCRIPTION

Toluene Diisocyanate
Poison B- UN 2078 - RQ 100 Lbs
*** Placarded Poison ***

CC NO. 190	UN/NA CODE 2078

DATE PREPARED: 1 / 30 / 88 UPDATED: 5 / 19 / 88

SECTION X - PRODUCT LABEL

LUPRANATE* T80-Type 3

DANGER: POISON
HARMFUL IF INHALED.
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, rubber gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a well-ventilated place. Outage of container should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in closed container. Store Store above 60 F to prevent freezing and isomer separation. If solidified, do not exceed 95 F while thawing to prevent discoloration. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
CAS No.: 584-84-9; 91-08-7.
Proper Shipping Name: Toluene Diisocyanate, Poison B - UN 2078 RQ
Made in USA.
Polymers
0588

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 585734 PXI Iso #1

SECTION I

*Registered Trademark

TRADE NAME: PXI Iso #1

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
PXI Iso # 1		100	Not established
Contains:			
Toluene Diisocyanate--TDI	26471-62-5	<50	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm OSHA (Trans)
Isocyanate Prepolymer	9017-04-3	>50	Not established

All components are in TSCA inventory.
SARA Title III Sect. 313: Listed.

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.01 (TDI)

SPECIFIC GRAVITY OR BULK DENSITY: 1.2

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200 F PMCT

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 585734 PXI Iso #1

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA:	RESULT:
PXI Iso # 1	
Toluene diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H

EFFECTS OF OVEREXPOSURE:

The primary routes of exposure to this material are eye or skin contact, and inhalation. Contact with the skin and eyes may result in severe irritation. Inhalation of TDI mists or vapors may cause respiratory irritation, breathlessness, chest discomfort, and reduced pulmonary function. Overexposure to some isocynanates such as TDI may cause allergic respiratory reactions in some individuals leading to asthmatic breathing. TDI was carcinogenic to rats and mice in a NTP bioassay; however, it was not carcinogenic to rats in a lifetime inhalation study. TDI is listed in the National Toxicology Program (NTP) Fourth Annual Report on Carcinogens, and the International Agency for Research (IARC) concluded that there is sufficient evidence that TDI is carcinogenic in animals.

Existing medical conditions aggravated by exposure to this material:
Pulmonary disorders.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY:	Stable.
CONDITIONS TO AVOID:	Avoid temperatures >40 C for extended periods of time.
CHEMICAL INCOMPATIBILITY:	Basic compounds, caustic soda, tertiaryamines,water.
HAZARDOUS DECOMPOSITION PRODUCTS:	TDI vapors, NOx, CO and HCN.
HAZARDOUS POLYMERIZATION:	May occur. Avoid contamination with moisture
CONDITIONS TO AVOID:	and other products that react with isocyanates.

CORROSIVE TO METAL:	No	OXIDIZER:	No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Chemical goggles; also wear a face shield if splashing hazard exists.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.
Eye wash fountain and safety shower should be readily available.

PRODUCT NUMBER: 585734 PXI Iso #1

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

PXI #1 Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid, NOS-	Yes--TDI REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	None

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison "2810"	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS-(Contains Toluene Diisocyanate)
UN 2810, RQ 100 LBS.
*** Placarded: Poison ***
(Plastic, Synthetic, Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 4 / 27 / 89 UPDATED: 4 / 27 / 89

SECTION X - PRODUCT LABEL

PXI Iso # 1

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0389

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 585735 PXI Iso # 2

SECTION I

*Registered Trademark

TRADE NAME: PXI Iso # 2

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
PXI Iso # 2		100	Not established
Contains:			
Toluene Diisocyanate--TDI	26471-62-5	50	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm OSHA (Trans)
Isocyanate Prepolymer	9017-04-3	50	Not established

All components are in TSCA inventory.
SARA Title III Sect. 313: Listed.

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A

pH: N/A

VAPOR PRESSURE mm Hg @20 C: 0.01 (TDI)

SPECIFIC GRAVITY OR BULK DENSITY: 1.2

SOLUBILITY IN WATER: Water Reacts

APPEARANCE: Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200 F PMCT

AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 585735 PXI Iso # 2

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA: **RESULT:**

PXI Iso # 2

Toluene diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H

EFFECTS OF OVEREXPOSURE:

The primary routes of exposure to this material are eye or skin contact, and inhalation. Contact with the skin and eyes may result in severe irritation. Inhalation of TDI mists or vapors may cause respiratory irritation, breathlessness, chest discomfort, and reduced pulmonary function. Overexposure to some isocynanates such as TDI may cause allergic respiratory reactions in some individuals leading to asthmatic breathing. TDI was carcinogenic to rats and mice in a NTP bioassay; however, it was not carcinogenic to rats in a lifetime inhalation study. TDI is listed in the National Toxicology Program (NTP) Fourth Annual Report on Carcinogens, and the International Agency for Research (IARC) concluded that there is sufficient evidence that TDI is carcinogenic in animals.

Existing medical conditions aggravated by exposure to this material:
Pulmonary disorders.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines,water.

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 585735 PXI Iso # 2

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

PXI # 2 Isocyanate is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B Liquid ,NOS -	Yes--TDI REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	None

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison "2810"	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS-(Contains Toluene Diisocyanate)
UN 2810, RQ 100 Lbs.
*** Placarded: Poison ***
(Plastic, Synthetic, Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 4 / 27 / 89 UPDATED: 4 / 27 / 89

SECTION X - PRODUCT LABEL

PXI Iso # 2

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0389

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

BASF

PRODUCT NUMBER: 585736 PXI Iso # 12

SECTION I

*Registered Trademark

TRADE NAME: PXI Iso # 12

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: TDI Prepolymer

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
PXI Iso # 12		100	Not established
Contains:			
Toluene Diisocyanate--TDI	26471-62-5	>30	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm OSHA (Trans)
Modified TDI		<60	Not established
Polymeric MDI	9016-87-9	10	Not established
SARA Title III Sect. 313: Listed. All components are in TSCA inventory.			

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.01 (TDI)	
SPECIFIC GRAVITY OR BULK DENSITY: N/A	
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Dark Brown Liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): >200 F PMCT AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Firefighters must be equipped with self-contained breathing apparatus and turnout gear. Personnel engaged in fighting isocyanate fires must be protected against
UNUSUAL FIRE AND EXPLOSION HAZARDS	nitrogen dioxide fumes as well as isocyanate vapors. Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

PRODUCT NUMBER: 585736 PXI Iso # 12

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA: **RESULT:**

PXI Iso # 12

Toluene Diisocyanate--TDI	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4 H

EFFECTS OF OVEREXPOSURE:

The primary routes of exposure to this material are eye or skin contact, and inhalation. Contact with the skin and eyes may result in severe irritation. Inhalation of TDI mists or vapors may cause respiratory irritation, breathlessness, chest discomfort, and reduced pulmonary function. Overexposure to some isocynanates such as TDI may cause allergic respiratory reactions in some individuals leading to asthmatic breathing. TDI was carcinogenic to rats and mice in a NTP bioassay; however, it was not carcinogenic to rats in a lifetime inhalation study. TDI is listed in the National Toxicology Program (NTP) Fourth Annual Report on Carcinogens, and the International Agency for Research (IARC) concluded that there is sufficient evidence that TDI is carcinogenic in animals.

Existing medical conditions aggravated by exposure to this material:
Pulmonary disorders.

FIRST AID PROCEDURES:

Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots, and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 585736 PXI Iso # 12

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

PXI Iso #12 is a RCRA-regulated product. Wear protective clothing and evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

2% detergent. Dispose of waste in a RCRA-permitted facility. Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B Liquid, NOS-	Yes--TDI REPORTABLE QUANTITY (RQ) 1 lb.

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	None

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison "2810"	TDI

BILL OF LADING DESCRIPTION

Poison B Liquid, NOS-(Contains Toluene Diisocyanate)
UN 2810, RQ 100 Lbs.
*** Placarded: Poison ***
(Plastic, Synthetic, Liquid, NOIBN)

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 4 / 27 / 89 UPDATED: 4 / 27 / 89

SECTION X - PRODUCT LABEL

PXI Iso # 12

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS Nos.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS Nos.:101-68-8;9016-87-9).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0987

MATERIAL SAFETY DATA SHEET

BASF Corporation Chemicals Division
100 Cherry Hill Road, Parsippany, New Jersey 07054, (201) 316-3000

HMIS: H4 F1 R1

BASF

PRODUCT NUMBER: 586392 ELASTOFLEX* C2010U Isocyanate

SECTION I

*Registered Trademark

TRADE NAME: ELASTOFLEX* C2010U Isocyanate

CHEMICAL NAME: Isocyanate Prepolymer

SYNONYMS: Urethane-modified Isocyanate

FORMULA: Mixture

CHEMICAL FAMILY: Aromatic Isocyanates

MOL. WGT.: N/A

SECTION II - INGREDIENTS

COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
ELASTOFLEX* C2010U Isocyanate		100	Not established
Contains:			
2,4-Toluene diisocyanate	584-84-9	<25	0.005 ppm; 0.02 ppm STEL ACGIH, OSHA (Final) 0.02 ppm C OSHA (Trans)
2,6-Toluene diisocyanate	91-08-7	<10	0.005 ppm; 0.02 ppm STEL NIOSH recommendation
Isocyanate prepolymer		>25	Not established
Polymethane polyphenyl isocyanate	9016-87-9	>40	Not established

All components are in TSCA inventory.
SARA Title III Sect. 313: Listed.

SECTION III - PHYSICAL DATA

BOILING/MELTING POINT @760 mm Hg: 484 F/ N/A	pH: N/A
VAPOR PRESSURE mm Hg @20 C: 0.025 @ 77 F	Vapor Density (Air=1): 6.0
SPECIFIC GRAVITY OR BULK DENSITY: 1.22	Freezing Point: 51.8-53.6 F
SOLUBILITY IN WATER: Water Reacts	

APPEARANCE: Brown liquid ODOR: Pungent INTENSITY: Strong

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): 270 F TAG Open Cup AUTOIGNITION TEMP: N/A

FLAMMABILITY LIMITS IN AIR (% BY VOL) LOWER: 0.9% UPPER: 9.5%

EXTINGUISHING MEDIUM	Use water fog, foam or CO2 extinguishing media.
SPECIAL FIREFIGHTING PROCEDURES	Personnel engaged in fighting isocyanate fires must be protected against nitrogen dioxide fumes as well as isocyanate vapors. Firefighters must wear self-contained breathing apparatus and turnout gear.
UNUSUAL FIRE AND EXPLOSION HAZARDS	Avoid water contamination in closed containers or confined areas; carbon dioxide gas is generated.

EMERGENCY TELEPHONE NUMBER

CHEMTREC 800-424-9300 201-316-3000

THIS NUMBER IS AVAILABLE DAYS, NIGHTS, WEEKENDS, AND HOLIDAYS

SECTION V - HEALTH DATA

TOXICOLOGICAL TEST DATA: **RESULT:**

ELASTOFLEX* C2010U Isocyanate 2,4-Toluene diisocyanate	Severe eye and skin irritant, sensitizer
Rat, Oral LD50	5.8 g/kg.
Mouse, Inhalation LC50	10 ppm/4H
Diphenylmethane diisocyanate	Respiratory sensitization possible

EFFECTS OF OVEREXPOSURE:

Inhalation of the vapors causes severe irritation to lungs, and pulmonary edema can occur after a serious vapor exposure. Eye contact with MDI may result in irritation, mild corneal opacity, and purulent ocular discharge. Inhalation of MDI mists or vapors may cause respiratory irritation, breathlessness, chest discomfort, and reduced pulmonary function. Overexposure to isocyanates such as MDI may cause allergic respiratory reactions in some individuals leading to asthmatic breathing. TDI was carcinogenic to rats and mice in a NTP bioassay; however, it was not carcinogenic to rats in a lifetime inhalation study. TDI is listed in the National Toxicology Program (NTP) Fourth Annual Report on Carcinogens, and the International Agency for Research (IARC) concluded that there is sufficient evidence that TDI is carcinogenic in animals.
Existing medical conditions aggravated by exposure to this material:
Pulmonary disorders.

FIRST AID PROCEDURES:

Eyes--Flush eyes with flowing water for at least 15 minutes
If irritation develops, consult a physician.
Skin--Wash affected skin areas thoroughly with soap and water.
Remove clothing and launder contaminated clothing before reuse. If irritation develops, consult a physician.
Ingestion--If swallowed, dilute with water.
Do NOT induce vomiting.
Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Get medical attention immediately.
Inhalation--If inhaled, move to fresh air. Aid in breathing if necessary, and get medical attention.

SECTION VI - REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: Avoid temperatures >40 C for extended periods of time.

CHEMICAL INCOMPATIBILITY: Basic compounds, caustic soda, tertiaryamines, water

HAZARDOUS DECOMPOSITION PRODUCTS: TDI vapors, NOx, CO and HCN.

HAZARDOUS POLYMERIZATION: May occur.
CONDITIONS TO AVOID: Avoid contamination with moisture and other products that react with isocyanates.

CORROSIVE TO METAL: No **OXIDIZER:** No

SECTION VII - SPECIAL PROTECTION

RESPIRATORY PROTECTION:
Approved respirator for transferring operations or escape.
Self-contained breathing apparatus if the P.E.L. is exceeded, or in confined areas or if a leak occurs.

EYE PROTECTION: Wear fitted goggles or face shield and safety glasses.

PROTECTIVE CLOTHING: Rubber gloves, coveralls, boots and rubber apron which must be cleaned after each use.

VENTILATION: Use local exhaust wherever vapors are generated.

OTHER: Maintain work area below P.E.L.

PRODUCT NUMBER: 586392 ELASTOFLEX* C2010U Isocyanate

SECTION VIII - ENVIRONMENTAL DATA

ENVIRONMENTAL TOXICITY DATA:

Aquatic toxicity rating: TLm 96: 10 ppm - 1 ppm.

SPILL AND LEAK PROCEDURES:

This is a RCRA-regulated product. Wear protective clothing, evacuate all not involved in the cleanup. For minor spills, absorb with absorbent and containerize into open top drums. Decontaminate spill area with a mixture of 90% water, 8% concentrated ammonia and 2% detergent. Dispose of

HAZARDOUS SUBSTANCE SUPERFUND: Yes RQ (lbs): 100

WASTE DISPOSAL METHOD:

waste in a RCRA-permitted facility.
Incinerate or landfill in a RCRA-permitted facility.

HAZARDOUS WASTE 40CFR261: Yes HAZARDOUS WASTE NUMBER: U 223

CONTAINER DISPOSAL:

Containers should be neutralized with liquid decontaminant. Empty containers, containing less than 1" of residue, may be landfilled. If containers are not empty, they must be disposed as a hazardous waste in a RCRA-licensed facility.

SECTION IX - SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49CFR172.101-102)	HAZARDOUS SUBSTANCE (49CFR CERCLA LIST)
Poison B, Liquid NOS	Yes--TDI REPORTABLE QUANTITY (RQ) 1 lb

D.O.T. HAZARD CLASSIFICATION (CFR172.101-102) PRIMARY	SECONDARY
Poison B	

D.O.T. LABELS REQUIRED (49CFR172.101-102)	D.O.T. PLACARDS REQUIRED (CFR172.504)	POISON CONSTITUENT (49CFR172.203(K))
Poison	Poison	TDI

BILL OF LADING DESCRIPTION
Poison B Liquid NOS (Contains Toluene Diisocyanate) UN2810

CC NO. 217	UN/NA CODE 2810

DATE PREPARED: 2 / 2 / 89 UPDATED: 5 / 1 / 89

SECTION X - PRODUCT LABEL

ELASTOFLEX* C2010U Isocyanate

DANGER: POISON. HARMFUL IF INHALED.
CONTAINS TOLUENE DIISOCYANATE (CAS No.: 584-84-9; 91-08-7); DIPHENYLMETHANE DIISOCYANATE (CAS No.: 9016-87-9).
CONTACT WITH EYES AND SKIN RESULTS IN SERIOUS BURNS. INHALATION OF VAPORS CAUSES SEVERE IRRITATION TO LUNGS. PULMONARY EDEMA MAY OCCUR. PULMONARY SENSITIZATION CAN OCCUR IN SOME INDIVIDUALS, LEADING TO ASTHMA-TYPE SPASMS OF THE BRONCHIAL TUBES AND DIFFICULTY IN BREATHING. INDIVIDUALS WITH A HISTORY OF RESPIRATORY ILLNESS, ASTHMATIC CONDITIONS, EYE DAMAGE OR TDI SENSITIZATION SHOULD NOT BE EXPOSED TO THIS PRODUCT.
IN AN NTP STUDY, TDI WAS CARCINOGENIC TO RODENTS GIVEN HIGH ORAL DOSES AND IS INCLUDED IN THE NTP ANNUAL REPORT ON CARCINOGENS. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mists. Use with local exhaust. Wear an approved respirator or self-contained breathing apparatus, fitted goggles or face shield and safety glasses, gloves, coveralls, boots, apron and other protective clothing as necessary to prevent contact.

FIRST AID:
Eyes-Immediately wash eyes with running water for 15 minutes. Get immediate medical attention.
Skin-Wash affected areas with water while removing contaminated clothing. Get immediate medical attention. Launder contaminated clothing before reuse.
Ingestion-If swallowed, DO NOT INDUCE VOMITING. Dilute with water or milk and get immediate medical attention. Never give fluids or induce vomiting if the victim is unconscious or having convulsions.
Inhalation-Move to fresh air. Aid in breathing, if necessary, and get immediate medical attention.

HANDLING AND STORAGE: Keep containers closed and store in a dry, well-ventilated place. Outage should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure buildup in a closed container. Store above 60 F to prevent freezing and isomer separation. Do not exceed 95 F while thawing. Mix before using.

IN CASE OF SPILLS OR LEAKS: Material is a RCRA-regulated product. Spills should be contained, absorbed and placed in suitable containers for disposal in a RCRA-licensed facility.

IN CASE OF FIRE: Use water fog, foam or CO2 extinguishing media. Firefighters should be equipped with self-contained breathing apparatus and turnout gear for protection against TDI vapors and toxic decomposition products.

EMPTY CONTAINERS: All labeled precautions must be observed when handling, storing and transporting empty containers due to product residues. Do not reuse this container unless it is professionally cleaned and reconditioned.

DISPOSAL: Spilled material, unused contents and empty containers must be disposed of in accordance with local, state and federal regulations. Refer to our Material Safety Data Sheet for specific disposal instructions.

IN CASE OF CHEMICAL EMERGENCY: Call CHEMTREC day or night for assistance and information concerning spilled material, fire, exposure and other chemical accidents 800-424-9300.

ATTENTION: This product is sold solely for use by industrial institutions. Refer to our Technical Bulletin and Material Safety Data Sheet regarding safety, usage, applications, hazards, procedures and disposal of this product. Consult your supervisor for additional information.

FOR INDUSTRY USE ONLY.
Proper Shipping Name: Poison B, Liquid NOS - UN 2810 RQ
Made in USA.
Polymers
0289

Technical Service Report

Toluene Diisocyanate

BASF Corporation
Chemicals Division
Parsippany, New Jersey 07054

BASF

TOLUENE

DIISOCYANATE

BASF Wyandotte TDI is an 80-20 mixture of 2,4 and 2,6 isomers of toluene diisocyanate. Made in a modern, efficient plant at Geismar, Louisiana, this aromatic isocyanate is a highly purified product, assaying 99.5% TDI minimum. Exacting manufacturing and shipping specifications insure uniformity in every delivery whether drum, tank truck, or tank car. This manual describes the properties of TDI, the hazards connected with its use, and how it can be safely handled, stored and used.

4/81 Fifth Edition

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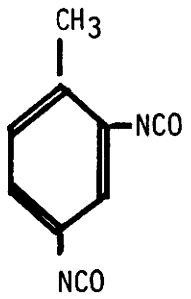
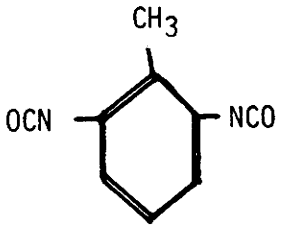
Chemical Name: Toluene Diisocyanate

Common Name: Toluene Diisocyanate
Tolylene Diisocyanate
TDI



2,4 Toluene Diisocyanate



2,6 Toluene Diisocyanate

Physical Properties

Molecular Weight	174.2
Specific Gravity 25°/25°C.	1.22 ± 0.01
Boiling Point (10 mm Hg.)	248°F. ± 1.8° (120°C. ± 1°)
Density	10.2 lbs./gal.
Viscosity, Brookfield at 20°C.	3.2 cps.
Flash Point (Cleveland Open Cup)	270°F. (132°C.)
Vapor Pressure at 20°C.	0.01 mm Hg.
Freezing Point	53.6 ± 1.8°F. (12.0°C. ± 1°)
Hygroscopicity	Reacts with water with evolution of carbon dioxide.
Reactivity	Reacts with compounds containing active hydrogen, the reaction rate depends on the nature of the active hydrogen compound.
Specific Heat	0.35 BTU/lb/°F at 20°C. (68°F.) 0.41 BTU/lb/°F at 100°C. (212°F.)

BASF WYANDOTTE CORPORATION

TOLUENE DIISOCYANATE

Specification Limits	Type I	Type II
Assay, % by weight as TDI, min.	99.5	99.5
Total acidity as HCl, wt. %	0.002-0.005	0.007-0.009
Hydrolyzable chloride, wt. %	0.002-0.005	0.008-0.012
Total chlorine, % max.	0.010	0.020
Isomer ratio - 2,4 wt. % 2,6 wt. %	80 ± 1 20 ± 1	80 ± 1 20 ± 1
Color, APHA maximum	15	15
Suspended matter	- Substantially free -	

CHEMICAL REACTIONS OF TDI

This is a brief description of the more important reactions of toluene diisocyanate. For a detailed discussion of the subject see:

> Arnold, R. G., Nelson, J. A., and Verbanc, J. J., Chem. Rev's., 57 47 (1957) or "Polyurethanes: Chemistry and Technology" Part I Chemistry, J. A. Sanders and K. C. Frisch, Interscience Publishers, New York, N. Y.

Isocyanates react with any compound containing an "active" hydrogen; i.e., a hydrogen atom attached to a nitrogen, oxygen, sulfur, phosphorus, or halogen. For example, TDI reacts with amines, alcohols, water, mercaptans, phenols, carboxylic acids, amides, ureas, and urethanes. These reactions occur at different rates and all are subject to catalysis by tertiary amines or metallic catalysts. The reaction which occurs with all of these compounds may be represented by the general equation:

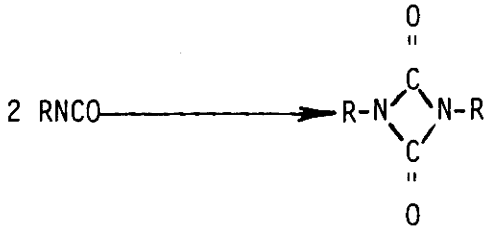
$$RNCO + HX \longrightarrow RN\overset{H}{\underset{|}{-}}C\overset{O}{\underset{\|}{-}}X$$

The nature of "X" in this equation not only affects the rate of reaction, but dictates the stability of the initial product. For example, the product resulting from the reaction of TDI with water decomposes immediately to carbon dioxide and amine. Similarly, the initial product formed from reaction with a carboxylic acid decomposes, at a slightly elevated temperature, to an amide and carbon dioxide. Urethanes made from phenols and isocyanates decompose at elevated temperatures to regenerate the isocyanate (reversal of the above reaction): This method is used in making "blocked" isocyanates for coatings. The reaction of TDI with alcohols or amines leads to stable products (urethanes and ureas, respectively) which, in turn, can react further with additional isocyanate.

In the preparation of polymers from TDI, each of the aforementioned reactions can take part. For example, in the "one-shot" method of producing cellular polyurethanes, reacting TDI with a di- or polyfunctional alcohol (polyether polyol) results in the formation of the polyurethane "backbone" of the polymer (chain extension). Excess TDI and water are commonly used for the in situ formation of carbon dioxide ("water-blown foams") and amine. The amine reacts rapidly with TDI, introducing urea groups into the polymer chain. These urea groups (and to a lesser extent, urethane groups) can react with excess TDI to cross-link the polymer chain. Alternatively, cellular urethane products may be prepared by solvent blowing. An inert volatile compound (fluorocarbon or chlorocarbon) serves as the source of gas to form the "foam". The desired degree of cross-linking is achieved by using more highly functional polyols.

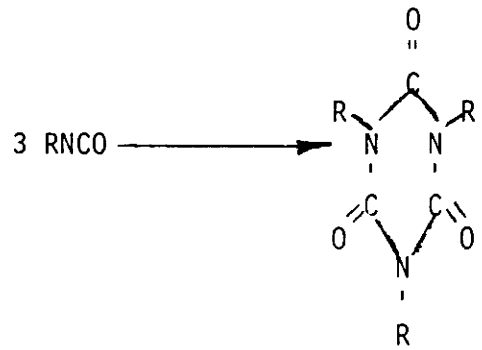
A second technique in making polymers from TDI is the prepolymer process. In this method, excess TDI is reacted with a polyol to make a polymer having NCO end groups. This prepolymer can then be reacted with glycols or diamines to cross-link and complete the polymerization.

Isocyanates undergo a number of reactions with themselves under the influence of various catalysts. The most common reaction is the dimerization to form a uretidione, in the presence of tertiary amines.



This reaction is reversible and at elevated temperatures the dimer will dissociate and undergo the expected isocyanate reaction.

A similar reaction which also occurs in the presence of basic catalysts is trimerization to form isocyanurates.



Unlike the dimer, the trimer is a stable compound and does not readily dissociate.

Isocyanates will also react to yield carbodiimides.

$$2\ RNCO \longrightarrow RN = C = NR + CO_2$$

This reaction is caused by heat alone (temperature $> 175^{o}C.$) but is also catalyzed by certain compounds such as phosphine oxides and phospholines. Using a phospholine catalyst, polymeric carbodimides have been obtained from diisocyanates.

POTENTIAL HAZARDS AND THEIR CONTROL

TDI is an irritating chemical in both its liquid and vapor forms. A thorough knowledge of its potential hazards, with strict adherence to recommended safety practices, is essential before TDI can be handled, stored, and used.

I. HAZARDS

A. Health Hazards. TDI is hazardous in either its liquid or vapor forms. On contact with the skin or eyes, TDI produces irritation and if not removed immediately will cause burns. Inhalation of the vapor or mist is capable of producing difficult and labored breathing in some individuals. Some individuals may develop a hypersensitivity to the vapors and may then respond to very low concentrations.

Warning Properties. TDI's characteristic odor and strong irritating effect on the eyes and upper respiratory passages are warnings of its presence in the air. No one will voluntarily stay in a high concentration of vapor. However, at the ceiling level of 0.02 ppm as required by OSHA it is difficult to detect the compound by odor or immediate sensory effects. Therefore, odor or irritation should not be relied upon as indications of hazard levels in areas where repeated or prolonged exposure may occur. This low ceiling level has been set to avoid delayed irritation or possible difficulty in breathing (See Section V, Medical Considerations).

B. Fire and Explosion Hazards. Due to its high flash point, TDI does not constitute a severe fire hazard. (See Section IV).

II. ENGINEERING CONTROL OF HAZARDS

A. Building Design. Buildings in which TDI is handled or stored should be well ventilated and be of fire-resistive construction.

Equipment should be installed in such a fashion that a worker's path to the nearest exit is clear and unobstructed.

At least two exits should be provided for each separate room or building in which TDI is stored, handled or used. No portion of such a room or building should be farther than 75 feet from the nearest exit. Additional exits should be provided depending upon the number of persons in the building.

All exit doors should open out in the direction of travel and should be provided with panic hardware.

B. Equipment Design. Totally enclosed systems should be used for processing where TDI is a raw material. This is necessary because the escape of TDI vapors would be highly irritating to workers and cause them to abandon the area. Provisions should be made to make possible the addition or removal of materials without opening the equipment.

Wherever it is found necessary to open the equipment, adequate ventilation should be available to immediately remove any vapors that may be present. Exhaust ducts should be placed as close to the source of vapors as possible. Avoid drawing vapors through work areas.

Solid or residual materials that are removed from the process should be thoroughly decontaminated of TDI vapors.

Open containers or partially opened containers of TDI should not be left standing in working areas. Points at which containers must be opened should be well ventilated.

C. Ventilation. Good ventilation is essential in rooms or areas where TDI is handled. This material is toxic and its vapor is highly irritating to personnel.

1. Exhaust Hoods. A hood-type ventilation unit should be situated over equipment where TDI vapors are exposed to the atmosphere. The volume of air mechanically exhausted must be such that the hood face velocities are within acceptable limits (150 feet per minute)*. The type of hood to be used will depend upon the particular application, and the ventilation system should be designed by experienced engineers. The following design principles should be adhered to:

   a. The exhaust hood should be located as close as possible to the source of the escaping vapor.

   b. The process should be enclosed as much as possible.

   c. Baffles and side shields should be used to the fullest.

   d. The velocity of air at the point of vapor dispersal should be sufficiently high to capture the vapor particles.

   e. Advantage should be taken of air movement due to thermal currents.

   f. Vapors should not be drawn past the operator's face.

   g. The hood should be positioned so that it does not interfere with the operator's work.

*Alnor Instrument Company, Various models;
Mine Safety Appliance Company, smoke kit or equivalent

2. Pouring from Containers. When it is necessary to pour TDI from a can or drum, a temporary lid fitted with a flexible hose leading to the exhaust system should be placed on the container.

3. Area Ventilation. In some cases, the process equipment in which TDI leaks might possibly occur is too extensive to be enclosed by an exhaust hood. Here, mechanical ventilation of the entire room may be necessary.

D. Air Analysis. TDI has an OSHA permissible exposure limit ceiling value of 0.02 ppm which must not be exceeded. A CONCENTRATION WHICH CAN BE SMELLED (APPROXIMATELY 0.2-2.0 PPM, VARYING WITH THE INDIVIDUAL) IS TOO HIGH FOR CONTINUOUS EXPOSURE. Portable colorimetric indicators for the detection of TDI vapor are commercially available.* In addition, continuous and personal TDI monitors are also available for areas where repeated and/or prolonged exposures may occur.** It should be kept firmly in mind that the use of these instruments and procedures for the detection of TDI in the air requires trained personnel.

E. Electrical Equipment. All electrical equipment and wiring should be in compliance with the National Electrical Code. Explosionproof wiring is not required in areas where TDI is used.

F. Additional Precautions. Care should be taken to prevent TDI from coming into contact with basic compounds such as caustic soda, tertiary amines or other similar materials. This might cause uncontrollable polymerization of the isocyanate. The heat given off in such a reaction could result in rapid vaporization of any low boiling solvent that might be present. Furthermore, carbon dioxide will be liberated, resulting in a pressure build-up.

III. EMPLOYEE SAFETY

A. Employee Education and Training. Employee training is probably one of the most important safety measures a company can take. Although the company may provide the best in the way of protective equipment and expend great effort to be sure that each process or operation is designed with safety in mind, an improperly trained worker can create an undue hazard.

An effective employee education program should include the following items:

1. The operator should be thoroughly familiar with the process with which he is concerned, as well as the hazards that exist.

2. He should be instructed in proper handling procedures for the chemicals involved.

*National Drager, Inc.,
Parkway View Drive, Pittsburgh, PA 15205

**MDA Scientific, Inc., 808 Busse Hwy, Park Ridge, IL 60068.
National Environmental Instruments, Inc., P.O.Box 590, Warwick, RI 02888.

3. He should know exactly what action to take if fires, spills, or other similar occurrences should take place.

4. He should be drilled in the proper use of firefighting, first aid and rescue equipment. It is important that he know the exact location of these items, as well as the location of safety showers, eye wash stations, bubbler drinking fountains, fire alarms, and emergency shutdown equipment.

5. He should know when personal protection equipment is to be used and how to use it effectively. (See Personal Protective Equipment section below).

It is the responsibility of supervision to train each worker and, equally as important to instill within him an attitude of safety. The supervisor must procure the necessary safety equipment and be sure that it is maintained in working order at all times.

Operating procedures, including all safety rules, should be posted in work areas where they may be read by employees.

B. Personal Protective Equipment

1. Availability and Use. While personal protective equipment is not an adequate substitute for good safe working conditions, adequate ventilation, and intelligent conduct on the part of employees working with TDI, it is, in many instances, the only practical means of protecting the worker, particularly in emergency situations. One should keep firmly in mind that personal protective equipment protects only the worker wearing it, and other unprotected workers in the area may be exposed to danger.

   The following personal protective equipment should be used as indicated:

2. Eye Protection.

   a. Safety Glasses. Metal or plastic rim safety spectacles with unperforated side shields which can be obtained with prescription safety lenses or suitable all-plastic safety goggles may be used where continuous eye protection is desirable, as in laboratories. However, where complete eye protection is needed, safety glasses alone are not adequate.

   b. Chemical Safety Goggles. Cup-type or rubber-framed goggles of the cover-all type, equipped with the approved impact-resistant glass or plastic lenses, should be worn whenever there is danger of TDI liquid or vapor coming in contact with eyes.

   c. Eye Washes. Should TDI liquid or vapor come into contact with the eyes, some means of flushing with water should be available nearby. Safety showers, eye wash station, or bubbler drinking fountains may be used. Wash eye thoroughly with water for at least 15 minutes, then report to the medical department. (See section V and VI).

3. Respiratory Protection. Severe exposure to TDI may occur in tanks during equipment repairs, when areas are being decontaminated following spills, or in case of failure of piping or equipment. NO ONE should enter a tank for repairs with TDI vapors present. The tank should be cleaned and purged before repairs are made inside the tank. (See Section VIII) Employees who may be exposed to spills or piping failures should be provided with the proper respiratory protection.

   Respiratory protection equipment must be carefully maintained, inspected, and cleaned regularly. In areas where frequent exposures to TDI vapors may occur, each worker should be assigned a gas mask (or whatever type of respiratory protective device is authorized). This equipment should be located at some easily accessible point. Every worker should know how to put on his mask quickly and how to operate it properly. When masks are not assigned on an individual basis, the equipment should be sterilized before use by another person.

   The following types of respiratory equipment are available:

   a. Self-Contained Breathing Apparatus - (Positive Pressure Type)-which permit the wearer to carry a supply of oxygen or compressed air in a cylinder, and the self-generating type which produce oxygen chemically; these units allow for greater mobility. The length of time a self-contained breathing apparatus provides protection varies according to the amount of air or oxygen supply carried. Cylinder (or compressed) oxygen should not be used in tanks or other confined spaces.

   b. Positive Pressure Hose Masks - supplied by externally-lubricated blowers or cylinders. Since these masks depend on a remote air supply, they should be used only where conditions will permit safe escape in the event of air supply failure. Care must be taken to locate a blower air source in an area which is free of air contaminants.

   c. Industrial Canister Type Gas Masks - equipped with full face pieces and approved by the National Institute of Occupational Safety and Health (NIOSH), and Mine Safety and Health Administration (MSHA), fitted with the proper canister for absorbing organic vapor, will afford protection against concentrations of TDI vapor not exceeding 2 percent by volume when used in accordance with the manufacturer's instructions. The oxygen content of the air must not be less than 19.5 percent by volume. The canisters should be used for relatively short exposure periods and discarded. They may not be suitable for use in an emergency since, at that time, the actual vapor

concentration is unknown and may be very high. The wearer must be warned to leave the contaminated area immediately on detecting the odor of a harmful vapor; this is an indication that the mask is not functioning properly or that the vapor concentration is too high.

Note: Where carbon monoxide may be encountered in addition to TDI the mask should be equipped with an all purpose canister and a timing device as approved by NIOSH/MSHA.

Air or oxygen supplied masks, equipped with full face pieces and approved by NIOSH/MSHA, should be used under the following conditions:

a. In emergencies when the vapor concentration is not definitely known.

b. When the vapor concentration is over 2 percent by volume.

c. When the oxygen content of the air may be less than 19.5 percent by volume.

d. When extended exposure is likely.

e. In equipment cleaning and repair work.

4. Head Protection. Hard hats should be worn where there is any danger from falling objects. If hard hats are not considered necessary, soft-brimmed hats or caps should be worn to give protection against liquid leaks and splashes.

5. Foot Protection. Rubber Safety shoes with built-in steel toe caps are recommended for workers handling drums and cans of TDI. Rubbers may be worn over leather shoes. Rubbers should be thoroughly washed with soap and water after mild external contamination, and should be discarded after severe contamination.

6. Body, Skin and Hand Protection. Contact of liquid TDI with the skin may lead to irritation and blistering. A long-sleeved shirt should be worn whenever there is any danger of skin contamination. Chemical workers' rubber gloves and impervious aprons should be worn where possiblility of spill or splash exists.

   Should liquid TDI come in contact with the skin, affected areas should be thoroughly washed with soap and water. Alcohol may be used for a rinse after soap and water have been used. It is imperative that contaminated clothing be removed promptly and laundered before re-use.

IV. FIRE FIGHTING

Due to its high flash point, TDI does not constitute a severe fire hazard. However, it is important that the proper fire-fighting equipment be available in case it should be needed.

Water spray is effective for extinguishing fires covering large areas. Automatic sprinkler systems may be helpful in certain applications. Carbon dioxide or dry chemical extinguishers are also effective.

PERSONNEL ENGAGED IN FIGHTING TDI FIRES MUST BE PROTECTED AGAINST NITROGEN DIOXIDE FUMES, AS WELL AS TDI VAPORS. Fire-fighters should wear self-contained breathing apparatus. The usual fireman's body protection should be worn: turn-out coat, boots, and helmet.

V. MEDICAL CONSIDERATIONS

A. Health Hazards.

1. General. Workers must be adequately instructed and supervised in proper means of handling the chemical. It is a colorless to pale yellow liquid with a strong pungent odor and is irritating to the eyes and upper respiratory tract even in low concentrations. TDI is a potential skin and respiratory sensitizer and can cause difficulty in breathing in some individuals at a concentration below a point detectable either by irritation or odor.

   On contact with the skin or eyes, TDI causes irritation and if not removed immediately can produce burns. Inhalation of the vapors may be injurious to the lungs. After serious vapor exposure, pulmonary edema could occur.

2. Acute Toxicity.

   a. Systemic Effects. The capacity of TDI to produce allergic sensitization of the respiratory tract in humans is its most serious toxicological action and determines the magnitude of the threshold limit value. A value of 0.02 ppm by volume in air has been suggested as the maximum concentration considered safe for an 8-hour exposure. This is a ceiling concentration. This should be sufficiently low to prevent primary sensitization in most individuals. It should be noted that allergic attacks can occur in a sensitized person upon contact with very minute concentrations of TDI.

      It is a well documented fact that TDI is capable of causing acute respiratory illnesses. In some individuals, TDI causes sensitization resulting in the development of a bronchial asthma-like illness. This is called respiratory sensitization.

In certain patients, respiratory sensitization may develop after only one or two severe exposures or may result after repeated mild exposures. The respiratory sensitization may be so pronounced that reactivation of the acute bronchial asthma-like illness may occur after such a simple re-exposure as breathing air contaminated by TDI from a co-worker's clothing.

A very significant consideration is that odor provides no meaningful warning to the presence of TDI in a worker's environment. IF AN INDIVIDUAL CAN SMELL TDI, HE HAS ALREADY BEEN SUBJECT TO AN OVER-EXPOSURE. Odor threshold is reported as 0.2-2.0 ppm. The American Conference of Governmental Industrial Hygienists has concluded that a single exposure over a period of 15 minutes to a TDI concentration exceeding 0.06 ppm may result in sensitization with resultant illness if a single subsequent exposure occurs. The odor threshold is up to 6.6 times the danger level.

An exposure to TDI via the respiratory tract results in the symptoms of irritation similar to that of the common cold. The victim complains of burning and itching of his eyes, stuffiness and stinging of the nose, dry or sore throat, and fairly severe spasmodic episodes of dry coughing. Insomnia is a frequent accompanying symptom. Prevention of further TDI exposures over a period of several days usually results in a termination of symptoms with only a minimal amount of symptomatic therapy.

However, in some patients, a fairly severe exposure results in an illness which is not only more prolonged but also is characterized by symptoms much more severe than those of the common cold. These cases must be treated by a physician, and may require hospitalization. Symptoms include pain and tightness in the chest, spasmodic coughing associated with bronchospasm and audible wheezing. Pulmonary edema may develop following exposure to a high concentration of TDI. Insomnia, weakness, and fatigue also occur. There is a reduction in breathing capacity and the patients removal from TDI contaminated atmosphere and definitive therapy with bronchodilators, antihistamines, and corticosteroids will effect a cessation of symptoms after a week or ten days, along with an improvement in vital capacity.

The determination of what constitutes a TDI exposure can be a difficult problem. The minimum concentration of TDI in the atmosphere that will cause subjective symptoms and objective physical findings in any given individual, especially in a post-sensitization exposure is unknown. Certainly, any individual who smells TDI, even though he develops no symptoms, should report the incident to supervision. If anyone experiences an exposure severe enough to develop symptoms, mild though they might be, he should immediately consult a physician.

b. Local Effects. TDI, if allowed to remain on the skin, will produce redness, swelling, and blistering. Contact with the eyes will produce severe, immediate irritation which may result in permanent damage if untreated. Exposure to TDI vapor can lead to tears and burning of the eyes, as well as coughing.

In order to avoid the above effects and burns. TDI should be removed from the skin immediately. (See Section VI B)

When TDI comes in contact with the eyes, it may cause a severe immediate irritation. In order to avoid the possibility of permanent eye damage, it should be removed immediately. (See Section VI C)

Skin sensitization or dermatitis has not been a prominent occurence with the use of TDI, although skin test with guinea pigs indicate that it is a potential skin sensitizer. Dermatitis which occurs simultaneously with its use may be due to the catalyst involved.

c. Chronic Toxicity. Repeated exposure of the skin or of the eyes, nose, or upper respiratory tract may cause chronic irritation.

Some individuals may develop a hypersensitivity to the TDI vapors and then upon exposure to amounts of this material in excess of a few hundredths of a ppm, develop spasm of the bronchial tubes which may produce difficulty in breathing.

B. Preventive Health Measures. The potentially serious industrial health hazards associated with TDI can be avoided if workers are adequately instructed and supervised in proper means of handling the chemical.

1. Personal Hygiene. Properly designed emergency showers and eye baths should be placed in convenient locations wherever TDI is used. All employees should know the location and operation of such equipment. It must be frequently inspected to make sure it is in proper working condition. It should be realized by every worker that exposure to a chemical which can cause a burn requires the instant application of copious amounts of water. The speed with which this is done may markedly decrease the severity of the burn.

The concept of the double locker rooms, separated by a shower room, should be employed in plants where TDI is used. Optimum ventilation for the locker room in which the soiled work clothing is kept is essential with the implication of adequate tempered make-up air.

Soiled clothes should be promptly deposited at the end of the work day in a covered, mechanically ventilated bin, then immersed in neutralizing solution and dried before washing. Lockers ought to be ventilated for the control of contamination from shoes, etc. Where gross contamination of shoes is expected, rubber footgear should be worn to facilitate decontamination prior to storage in lockers.

Note:
It may be pointed out here that the evaporation of two-thirds of a drop (1/30 cc; 0.04 gm) of TDI will contaminate a room measuring 20' x 20' x 8.5' to 0.06 ppm, said to be the level at which sensitization may occur.

2. Medical History and Physical Examination

a. Preplacement. Before being assigned to handling TDI, all individuals should have a careful preplacement health appraisal. In order to protect the health of these individuals properly, the physician carrying out the examination may wish to exclude from such processes, people with the following conditions:

Those with only one functioning eye.

Those with uncorrected, severe, faulty vision.

Those who have chronic diseases of the nose, throat, or lung.

Those with a history or presence of asthma or asthmatic bronchitis.

Those with a history of chronic skin disease.

b. Periodic. The incidence of a disease due to working with TDI will be markedly minimized if reasonable and acceptable industrial hygiene measures are consistently enforced. Once sensitized, however, an individual will always be sensitive to TDI. Therefore, any sensitized individual who is affected by exposure to minute amounts of TDI should be assigned to work in TDI-free environments.

VI. FIRST AID AND TREATMENT

A. General Principles. In cases of skin or eye exposure to TDI, the chemical must be removed immediately or severe injury may result.

After severe exposure to the vapors of TDI, it is important to move the patient from the contaminated area to a TDI-free location where medical attention can be rendered.

B. Contact with Skin and Mucous Membranes. The most important part of the treatment of local irritations is the removal of the irritant by the use of large amounts of water immediately after the accident occurs. If the skin contact is extensive and an emergency shower is available,

the employee should get under the shower immediately. Clothes can be removed while under the shower. In other instances, flushing with large amounts of running water together with soap and water washing should be continued for at least five minutes. It is important to remember to remove all clothing, including shoes and socks, which may be contaminated. Subsequent medical treatment will depend upon further developments. If a burn occurs, treatment should be similar to that employed for any thermal burn.

C. Contact with Eyes. If even small amounts of TDI enter the eyes, they should be irrigated immediately with large amounts of water for a minimum of fifteen minutes. This can be done with an eye bath if available, a gentle stream of water from a hose, or by pouring water from any clean container. The eyelids should be held apart during the irrigation to insure contact of water with all the tissues of the surface of the eyes and lids. After the first fifteen-minute period of irrigation, if severe pain is present, it is permissible as a first aid measure to instill 2 or 3 drops of 0.5 percent pontocaine solution or an equally effective aqueous topical anesthetic. No oils or oily ointments should be instilled unless ordered by the physician. The employee should be sent to a physician, preferably an eye specialist, as rapidly as possible.

D. Taken Internally. If a person has accidentally swallowed some TDI, the harm that occurs will be due to the possible corrosive action on the esophagus and stomach rather than any systemic toxicity. The person should instantly drink large amounts of water in order to reduce the concentration of the chemical. It is important that this be done as rapidly as possible rather than attempt to hunt for an antidote or a neutralizer which may not be available. If vomiting should occur, more water should be given immediately.

E. Inhalation. Exposed persons should go at once to an uncontaminated area. If the exposure was slight, and for a limited time, usually nothing more then this is needed. If, however, there has been a severe exposure, workers should get medical evaluation. If a worker has been overcome, he must be carried at once to an uncontaminated atmosphere; artificial respiration should be started immediately if breathing has ceased. Call a physician at once. If oxygen inhalation apparatus is available, oxygen should be administered but only by a person authorized for such duty by a physician.

The patient should be kept comfortably warm but not hot.

Medication will rarely be necessary where adequate oxygenation is maintained. Drugs should be given only by an attending physician.

NEVER ATTEMPT TO GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PATIENT.

VII. HANDLING AND STORAGE

A. Usual Shipping Containers

1. DOT Classification and Regulations -"Toluene Diisocyanate"is the proper shipping name according to the U.S. Department of Transportation TDI is assigned a hazard class of Poison B which subjects this chemical to strict regulations governing the packaging, bill of lading preparation, marking, labeling, placarding & transportation of hazardous materials. These regulations apply to shipments via rail, truck, air and water.

2. Type and Size - TDI is shipped in drums, tank trucks or tank cars. The drums are 55-gallon tight head, epoxy-phenolic lined. They comply with DOT Specification 17E.

3. Labeling and Identification - Each drum clearly displays the DOT hazard label of "POISON". Tank cars and tank trucks are placarded on all four sides with a "POISON" placard bearing the UN identification number "2078" prior to shipment. In addition all 55 gallon drums bear the following label:

585621L

TOLUENE DIISOCYANATE

(80% 2, 4 and 20% 2, 6 Toluene Diisocyanate)

DANGER: CAUSES BURNS HARMFUL IF INHALED. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION.

Do not breathe vapors. Vapor harmful below odor threshold and should not be inhaled by individuals subject to bronchial asthma. In certain susceptible individuals sensitization to vapor may occur as a result of repeated breathing of vapor. Do not get in eyes, on skin, on clothing. Keep container closed. Wash thoroughly after handling. Wear splash goggles, rubber gloves, respiratory protection and impervious protective clothing. Clean protective gear after each use.

FIRST AID: In case of contact immediately flush eyes or skin with running water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician immediately. (Discard contaminated clothing and shoes.) If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, oxygen may be given by qualified personnel. Call a physician immediately. If inhaled, remove to fresh air. If swallowed, give large amounts of water to dilute, get medical attention immediately.

HANDLING AND STORAGE: Keep container closed and store in a well ventilated cool dry place. Outage of any partial container should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture. Contamination by moisture or basic compounds can cause dangerous pressure build up in a closed container. Store above 60°F to prevent freezing and isomer separation. If solidified, do not exceed 85°F while thawing, to prevent discoloration. Mix before using. Use only with ventilation which will keep the vapor concentration below the TLV ceiling limit of 0.02 ppm.

ENVIRONMENTAL HAZARD: TDI may cause pollution. Do not discharge into lakes, streams, ponds or public waters. For guidance, contact your regional office of the EPA.

IN CASE OF SPILLS OR LEAKS: Isolate hazard area. Wear impervious protective clothing, rubber gloves, splash goggles and self contained breathing apparatus. Cover spill with sand or earth. Follow disposal instructions in the BASF Wyandotte Technical Service Report on Toluene Diisocyanate or call CHEMTREC. Do not place spilled material in closed containers because reaction with moisture may cause dangerous pressure build up.

IN CASE OF FIRE: Use water spray, foam or CO_2. Fire fighters should be equipped with self-contained breathing apparatus and turn out gear for protection against TDI vapors and toxic decomposition products.

DISPOSAL: Spilled material, unused contents and empty containers should be neutralized and disposed of in accordance with local, state or federal regulations (RCRA waste code U223).

FOR HELP IN EMERGENCY: Spills, leaks, fire, exposure or accident call CHEMTREC day or night-800 424 9300.

ATTENTION: This container may be unsafe when emptied because of the presence of product residues (vapor, liquid or solid). Therefore, all labeled precautions must be observed.

Made in U.S.A.

FOR INDUSTRY USE ONLY

NET WT. 551 LBS. (250 KG.)

BASF

BASF Wyandotte Corporation
Polymers Group
Parsippany, New Jersey 07054

Proper Shipping Name:
Toluene Diisocyanate
UN - 2078

B. Handling - General. TDI containers should remain closed as much as possible to prevent the escape of irritating vapors. When it is necessary to open a container, adequate ventilation should be provided (See Section II, (C)) and workmen should wear the proper equipment (See Section III, (B)).

When leaks, spills or equipment decontamination require the destruction of liquid TDI, only properly protected personnel should remain in the area. Leaking containers should be moved to the outdoors or to an isolated well-ventilated area and the contents transferred to other suitable containers.

1. Spills on Floors and Other Flat Surfaces. A powder has been developed that is effective in neutralizing isocyanate spillage. It is recommended that spills be covered with a thin layer of this powder. The isocyanate will be absorbed and destroyed within a few minutes. The product can then be swept away. The powder is made up as follows:

Sawdust	23.0 lbs	
Fuller's Earth	38.5 lbs	
	61.5 lbs	of carrier
Ethanol	19.2 lbs	
Triethanolamine	3.8 lbs	
Concentrated Ammonia Solution	3.8 lbs	
Water	11.5 lbs	
Dye (water solvent type)	0.2 lbs	
	38.5 lbs	of active solution
	100.0 lbs	of powder

The dye and water are first added to the reation vessel and the sawdust and Fuller's Earth are introduced and stirred for one hour. The remainder of the ingredients are then added with continuous stirring. A total of two hours stirring time from the beginning of the addition of solution is normally satisfactory. The finished powder is slightly moist but does not lump, and it can be removed as a loose mass. The powder can be stored in bags with polyethylene liners.

The ethanol serves both as a solvent and as a reactant for the formation of urethanes. The triethanolamine is a powerful catalyst, and ammonia serves to neutralize both liquid isocyanates and isocyanate vapors. The presence of water and Fuller's Earth reduces the flammability of the final mixture to a safe level.

If the neutralizing powder described above is not available, spills can be dealt with by covering with such absorbents as vermiculite, Oil-Dri, Sol-Speedi-Dri, Fuller's Earth or an absorbent clay. The absorbent can then be swept up and transferred to an open drum.

The still open drum should be placed in a ventilated location or out of doors, filled with water and allowed to stand 48 hours. The contents of the drum can then be discarded.

After the absorbent has been swept up, the area should be washed down with the following decontaminting solution:

	Volume %
Water	90
Concentrated ammonia solution	8
Liquid detergent	2

2. Spills Where the Use of Powder is Undesirable. In some cases, the use of a neutralizing powder is undesirable. An example of this would be when TDI is running over process equipment or piping. The best method of handling this type of spill is to spray the isocyanate with a decontaminating mixture of 90% water, 8% concentrated ammonia, and 2% liquid detergent. Ammonia fumes will be given off, but these are not nearly as objectionable as TDI vapors.

3. Decontamination of Containers. Containers such as drums may be decontaminated by adding 5 to 10 lbs of the above described powder or solution, letting the drum stand for a while, and then rolling it a few times. The container should be continuously vented to prevent the build-up of pressure. After approximately 20 minutes contact of the powder with the contents, the container may be washed with water. If the powder is not available, empty drums may be decontaminated by placing them in an open area out of doors and filling with water. Allow to stand at least 48 hours. Bungs must not be replaced on drums containing water.

C. Drums

1. Handling. Drums should be unloaded and handled carefully to prevent damage. Each shipment should be inspected and leaking drums removed to a well ventilated area, preferably outdoors, and the contents transferred to a suitable container.

   Workmen responsible for opening or closing drums should wear the appropriate protective equipment (See Section III, (B)).

2. Emptying. Drums should be well-secured and blocked before empyting.

   To remove the body plug from a drum of TDI, the operator should use a bung or plug wrench. He should place the bung up, stand to one side, and face away during the operation. After the bung starts to loosen, it should be given not more than one full turn. If internal pressure exists, it should be allowed to escape to the atmosphere. After all pressure has been vented off, the operator can loosen the plug further and remove it.

3. Disposal. Before metal drums are scrapped, they should be steamed in a well ventilated area to convert any residual TDI to solid urea. Drums should then be crushed or pierced to render them impossible to re-use.

D. Tank Trucks - BASF Wyandotte uses the dedicated facility of common carriers to transport our TDI in tank trucks.

Shipments from our producing plant in Louisiana may be made with either bottom rear unloaders, rear top unloaders, or side unloaders depending on the carrier authorized by government tariff with rights to restrict delivery points. Trucks are equipped with 36 feet of 2 inch discharge hose as standard equipment. All are designed to be unloaded from a customer source of nitrogen or -40°F dew point dry air. Air compressors and dryers can be supplied from the Louisiana location based on the availability of units.

Ordinarily all operations involving the tank truck and its fittings and hoses are the responsibility of the tank truck operator. The unloading operation should be carried out by properly instructed employees in cooperation with the driver. More details on unloading requirements may be found in the D.O.T. Hazardous Materials Regulations 49 CFR Part 117.834 General requirements. The following requirements should be observed during the unloading of tank trucks of toluene diisocyante:

a. Drivers and unloading personnel should wear rubber gloves and the required respiratory protection while opening and closing valves and connecting or disconnecting hoses.

b. Unloading facilities should be level and paved and located so that the truck can easily and safely maneuver to the unloading spot.

c. Truck brakes should be set and the wheels blocked while unloading.

d. Waste disposal pails may be furnished so that the driver can drain any residual TDI from the hoses after unloading. These pails should be decontaminated as any other waste TDI.

e. A pressure pad should be left on the trailer after unloading to insure that atmospheric moisture does not contaminate the slight heel remaining in the unit.

E. A diagram for a typical 20,000 gallon TDI car is shown on page 21.

1. Unloading - A TDI tank car should be unloaded only with competent supervision. Detailed recommendations regarding unloading procedures set forth in the Manufacturing Chemists Association Manual Sheets TC-29 are a dependable guide to assist unloaders in performing this operation safely. TDI is not classified as a flammable liquid, but the basic unloading information is appropriate. Other details may be found in the D.O.T. Hazardous Materials Regulations 49 CFR Part 174.67, tank car unloading. The following requirements must be observed during the unloading of rail cars of toluene diisocyanate.

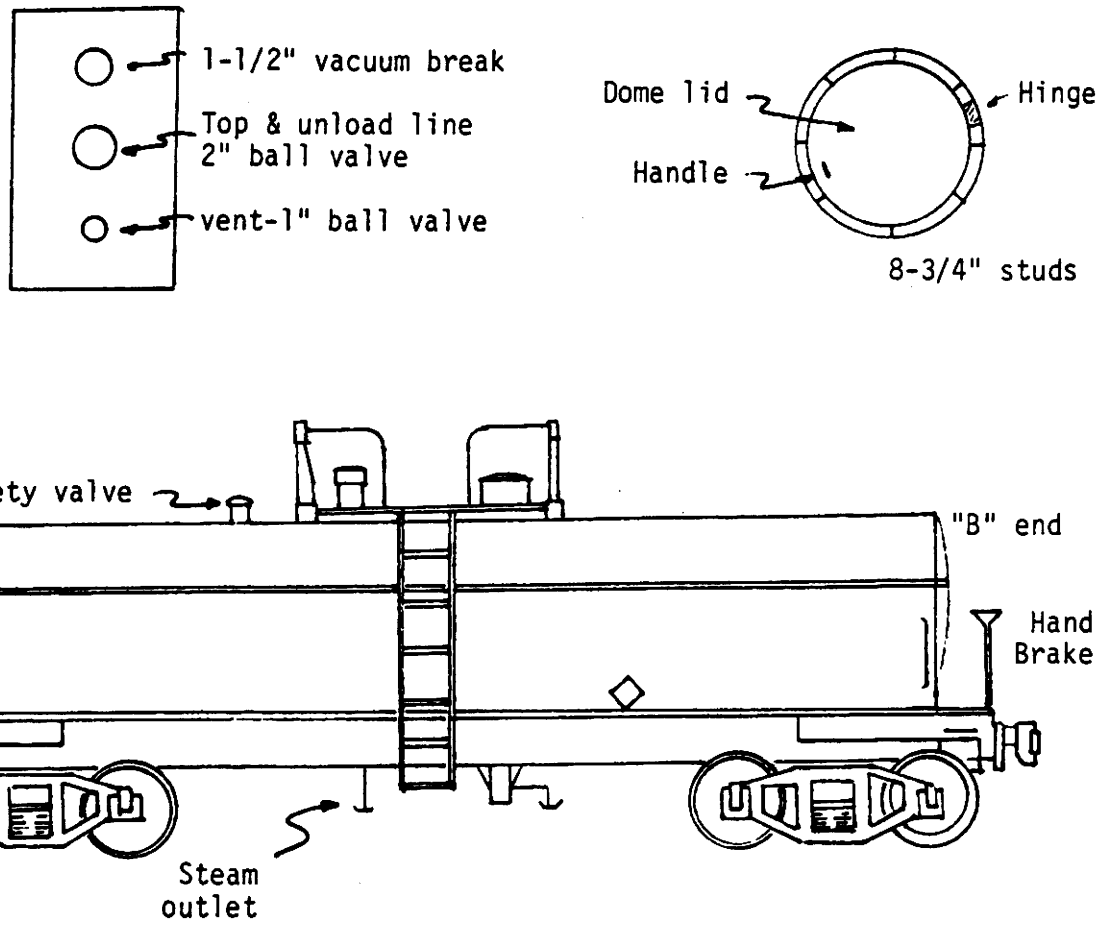
   a. Brakes should be set and wheels blocked on the car being unloaded. D.O.T. Regulation, 49 CFR 174.67 (2).

   b. "Stop. Tank Car Connected" metal caution signs should be placed at least one car length from both ends of the car as a warning to persons and switching crews approaching the car. These signs should not be removed until the car has been unloaded and all fittings disconnected. The signs should be at least 12" x 15", painted blue, and bear the legend in white.

   c. Derail devices should be placed at the open end(s) of siding at least one car length from the car being unloaded, unless car is protected by a closed and locked switch.

   d. It may be necessary to steam heat the tank car before unloading TDI. The 2,4 isomer begins to freeze at 53.6°F ± 1.8°F. (12.0°C ± 1°C) and the entire contents of the tank car will solidify if the temperature is lowered. A 15 psi maximum steam supply or tempered water should be attached to the steam coil on the tank car, and the TDI should be heated to 75-95°F (24-35°C) before unloading.

   e. The car may be top unloaded by installing a nitrogen pad line through the 1" ball valve on top of the car. Dry air (-40°F dew point) may also be used. The product unload line may be connected to the 2" ball valve on top of the car. It is essential that the tank car be padded with a dry atmosphere at all times. If this is not done, water vapor might be introduced that would react with the isocyanate, forming a solid urea material. This might result in plugging lines and loss of TDI. This pad should be kept on the empty car when returned to BASF Wyandotte.



Typical 20,000 Gallon Insulated Tank Car With Steam Heating Elements

f. The Department of Transportation requires that the hazardous placards, be reversed for the return trip. The opposite side indicates that the car is empty, but may still contain a poisonous liquid or vapors.

g. Return Precautions - Empty tank cars should be returned as promptly as possible in accordance with the Empty Car Return instructions furnished by BASF Wyandotte for every car. The routing instructions should always be strictly followed.

F. Samples - If it is ever necessary to ship samples of toluene diisocyanate, please contact the Urethane Technical Service Department in Parsippany, NJ (201-263-5649). Up-to-date information on the current regulations regarding packages, container sizes and method of shipment will be sent to you at that time. Many small package carriers will not accept responsibility for the shipment of properly prepared hazardous materials since they require special handling. Parcel Post and UPS cannot accept Poison B material.

G. Storage -

1. Indoor Storage. Indoor storage should be dry, fireproof, and adequately ventilated with temperature maintained above $60^{o}F$ ($15^{o}C$) to prevent freezing of the 2,4 TDI isomer. It is desirable that the floors be pitched to trapped floor drains. If drains are not provided, four inch curbs or a drained gutter, covered with an appropriate grill, should be constructed at door openings. (In areas where spillage is likely to occur, a drained gutter arrangement is preferable since a trapped floor drain might become plugged with ureas). All storage areas should be provided with an automatic sprinkler system, not because TDI is flammable, but to prevent any fire from heating the TDI and causing it to vaporize and possibly explode the drums. Drums should be arranged in an orderly manner and kept away from doorways in case a hurried exit is necessary.

2. Bulk Storage. All tanks in which TDI is stored must be blanketed with a dry gas, such as nitrogen, or with dry air ($-40^{o}F$ dew point) to prevent the introduction of moisture that would react with the isocyanate to form solid ureas and CO_2.

   Heating may sometimes be necessary because the 2,4 TDI isomer will begin to crystallize out at temperatures below $55^{o}F$ ($13^{o}C$).

   TDI in storage tanks should be thoroughly stirred before being pumped to processing equipment to assure uniformity of isomer composition (when both the 2,4 and 2,6 isomers are present). Stratification into isomer layers will result if the storage tank has been cool enough to cause the material to begin to freeze.

VIII. TANK AND EQUIPMENT CLEANING AND REPAIRS

A. Preparation of Tanks and Equipment. Tank and equipment cleaning should be under the direction of thoroughly trained personnel who are fully familiar with all of the hazards and the safeguards necessary for the safe performance of the work.

Process equipment should not be repaired when in operation. Lines should be drained and then blown dry with a dry inert gas such as nitrogen, if practicable. Workmen should wear appropriate protective devices (See Section III (B)). Any spills from lines or equipment should be cleaned up immediately (See Section VII, "Handling and Storage" (B)). A tank that is to be entered should be drained and then flushed with solvent. It is probably most convenient to use the process solvent for this purpose. The tank should then be filled with water once or twice and drained to remove vapors. After a purge with fresh air, a check should be made to determine whether any vapors remain. If a further test for oxygen sufficiency proves satisfactory, the tank is safe to enter. All lines leading in and out of the tank should be blanked off or disconnected and agitators locked out at the main cut-out.

B. Entering the Tank. No one should enter a tank or confined space until work permit has been signed by a authorized person indicating that the area has been tested and found to be safe.

No workman should enter a tank or vessel that does not have a manhole opening large enough to admit a person wearing a safety harness, life line, and emergency respiratory equipment. It should be ascertained that the tank or vessel can be left by the original entrance. A man outside the tank should keep the man in the tank under observation at all times. Another man should be available nearby to aid in rescue if necessary.

A supplied air respirator or self-contained breathing apparatus, together with rescue harness and life line should always be located outside the tank for rescue purposes, regardless of the type of respiratory equipment or air supplied which is provided for employees inside the tank.

C. Emergency Rescue. Under no circumstances should the rescuer enter a tank to remove a victim of over-exposure without proper respiratory protection, a safety harness and an attached life line. The free end of the life line should be manned by an attendant located outside the tank. Another attendant should be immediately available to assist in the rescue if needed. The rescuer should be in view of the outside attendant at all times of in constant communication with him.

D. Exterior Repair Work. A tank should be emptied and cleaned as outlined above before any major exterior repair work is done.

IX. WASTE DISPOSAL

TDI and wastes containing TDI are hazardous wastes as defined by the Resource Recovery and Conservation Act (RCRA). Wastes should be contained, stored, transported, manifested labelled, and disposed of in accordance with RCRA and all other federal, state or local laws. (RCRA waste code U-223). HAZARDOUS WASTE LABEL MUST APPEAR ON ALL WASTE DRUMS (SEE BELOW)

TDI to be disposed of should first be converted to a urea. This can be done by making use of the neutralizing compound described in the section "Handling and Storage - Spills on Floors and Other Flat Surfaces" on page 17. This eliminates irritating TDI vapor, and the resulting solid material can be easily disposed of. Liquid TDI should never be washed directly down the drain with water because it will produce solids that will plug the sewer line.

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T. SHIPPING NAME WASTE TOLUENE DIISOCYANATE UN OR NA# 2078

GENERATOR INFORMATION:

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

E.P.A. IDENTIFICATION NO. _____ MANIFEST DOCUMENT NO. _____

ACCUMULATION START DATE _____

CONTAINS HAZARDOUS OR TOXIC WASTES

HANDLE WITH CARE!

TDI SHIPPING INFORMATION

(A) Shipping Data

Useful shipping data are listed below:

Pounds per gal. 77°F. (25°C.)	10.2
Flash Point, Cleveland Open Cup	270°F.
Reid bomb vapor pressure at 100°F.	less than 1 psia
Freezing Point	53.6 ± 1.8°F. (12°C. ± 1°C.)
DOT HAZARD LABEL REQUIRED (DRUMS)	POISON B
Freight Classification	Toluene Diisocyanate - POISON B UN2078
DOT Placards Required (Bulk)	"POISON-2078"

(B) Shipping Containers

Drums

BASF Wyandotte TDI is supplied in the following tight head drums:

Code	DOT 17-E
Material of Construction	Steel
Lining	Pigmented Epoxy Phenolic
Openings in Head	3/4" x 2"
Size, gallons	55
Diameter	23-7/16"
Height	34-3/4" (outside)
Displacement, cu. ft.	11.1
Net Wt., Pounds	551
Net Wt., Kilograms	250

TANK TRUCKS AND TANK CARS

Item	Tank Trucks	Tank Cars
Capacity, gallons	4,000 (a)	8,000 and 20,000
Material of construction	Stainless Steel	Amercoat 75 lining
Type	MC307	103W, 111A100W
Insulation	5" F.G. compressed to 3"	6"
Heating coils	External jacket	External channels
Temperature gauge	Wall thermometer	Thermometer well top entry on most cars
Safety valve rating	35 psig	35 psig or 75 psig
Nitrogen inlet connection	3/4" Chicago coupling	1" NPT
Top unloading	Can be arranged - up to 3", 2" is normal; standpipe required	2" NTP standpipe
Bottom unloading	Can be arranged - up to 3", 2" is normal	3" stainless steel steam-jacketed Jamesbury ball valve reduced to 2 1/2" with ACF semi-steel cock with plug
Discharge hose	2" Chemsolv hose with stainless steel fittings, 2" x 36' long with plugs(b)	Furnished by customer
Gaskets	Teflon envelope type all flanges; white neoprene on manhole	Teflon and neoprene
Loading temperature	80 to 100°F.	80 to 100°F.
Padding gas	Nitrogen or air(c)	Nitrogen or air(c)

(a) Other capacities can be obtained.

(b) Hose lengths are fitted with plugs for prevention or contamination with atmospheric moisture.

(c) Oil-free, dry (-40°F. dew point) gas must be used.

TANK TRUCKS AND TANK CARS (cont'd)

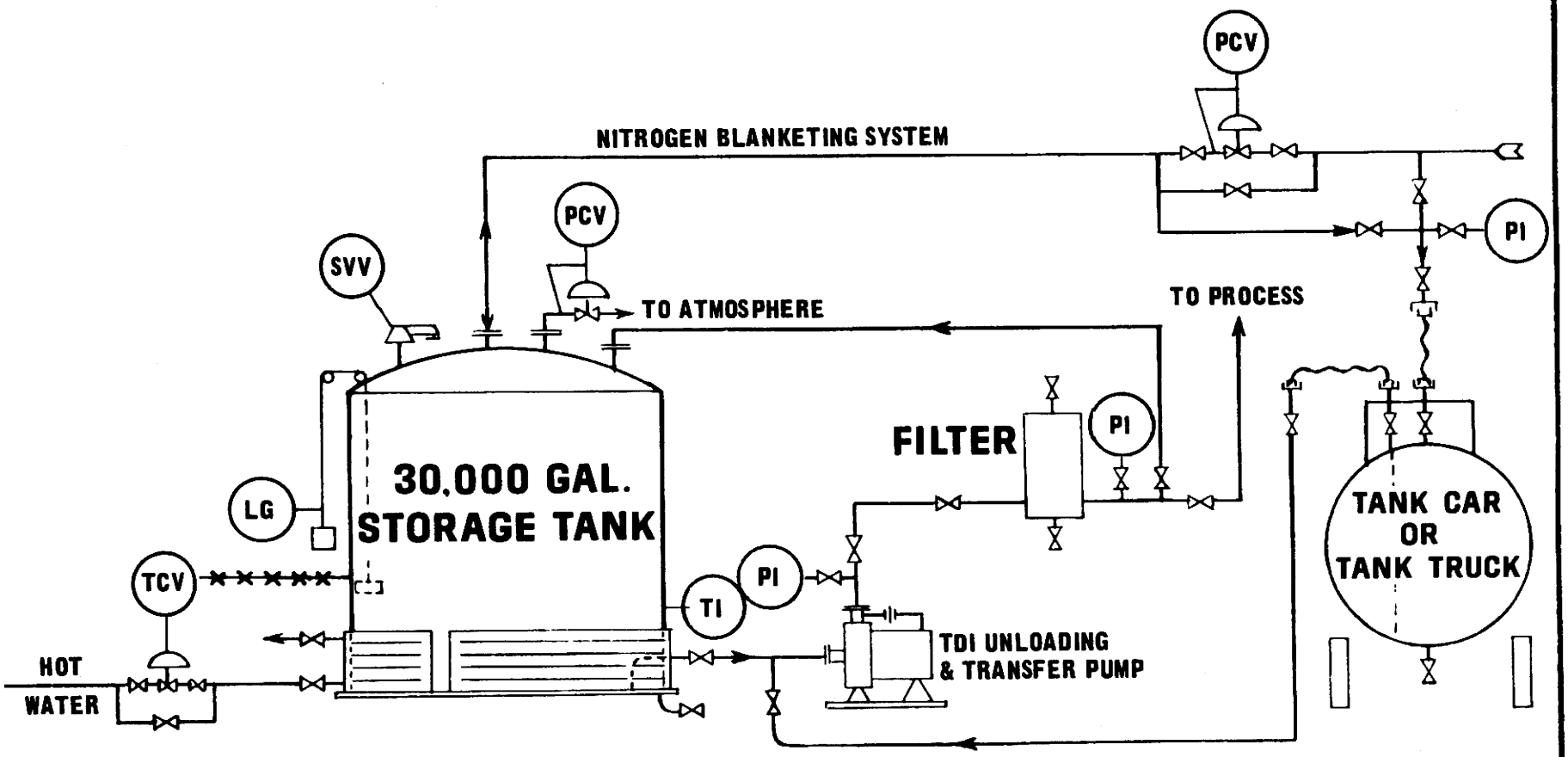
Item	Tank Trucks	Tank Cars
Delivery temperature	Loaded to arrive at 80° to 100°F.	Consignee can reheat on delivery
Heating coils steam pressure	15 psig maximum recommended	15 psig maximum recommended
Unloading pressure in tank	Not to exceed 20 psig	Not to exceed 32 psig

BULK HANDLING AND STORAGE SYSTEMS

Consumers of large quantities of TDI can enjoy substantial savings in delivered cost and handling labor by installing equipment to handle and store bulk shipments. A typical bulk handling and storage system is described for tank truck and tank car deliveries. It is not practical to show detailed information for every system. It is hoped that BASF Wyandotte's competent technical staff will be asked to assist in designing a system to fill your needs.

A typical flow diagram for a toluene diisocyante storage and handling system and a drawing of a storage tank are shown on the following pages.

TYPICAL FLOW DIAGRAM OF TOLUENE DIISOCYANATE STORAGE & HANDLING SYSTEM



LG – LEVEL GAGE
TI – DIAL THERMOMETER
PCV – PRESSURE CONTROL VALVE
SVV – SAFETY VENT VALVE
PI – PRESSURE GAGE
TCV – TEMPERATURE CONTROL VALVE

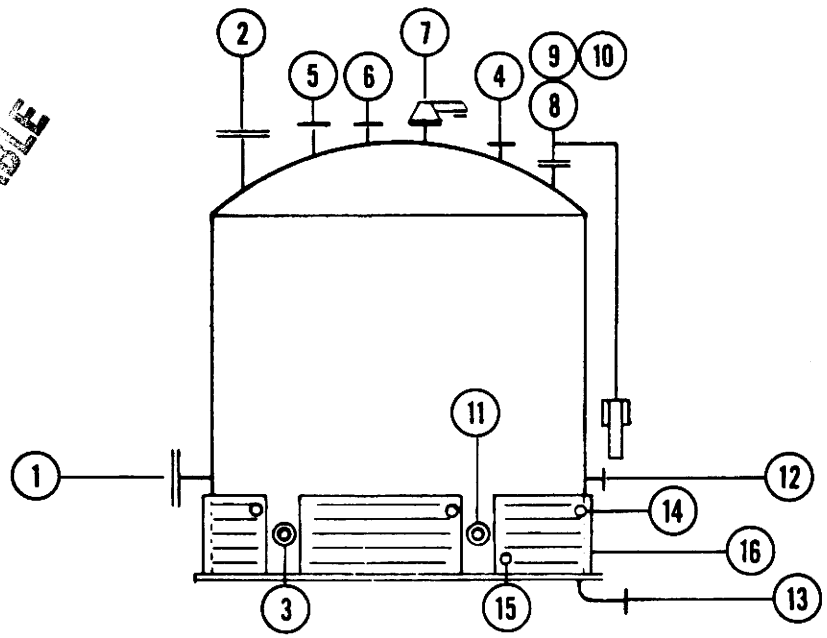
TANK DATA

1. Capacity – gallons	6,000	15,000	30,000
2. Liquid Specific Gravity	1.22	1.22	1.22
3. Weight of Contents (lbs.)	61,000	152,600	305,200
4. Weight of Tank (lbs.)	5,700	9,900	14,800
5. Diameter	9'	13'	16'–6"
6. Shell Height	13'–9"	16'–3"	19'–9"
7. Design Pressure at Top		0.5 psig	
8. Design Temperature at Top		110 F	
9. Max. Operating Pressure		0.25 psig	
10. Max. Operating Temperature		90 F	

11. Code Stamp: API–650
12. Materials: Shell 3/16 , Roof 1/4" , Bottom 1/4" All A-283 Gr. C.
13. Tank Lining: Amercoat 75 – 8-12 mils Dry Film Thickness
14. Manhole Rating: API – 650
15. Nozzle Rating: ASA – 150 # 1/16" R.F.
16. Type Head: Bottom – Flat, Top – Dome
17. Paint: Yes– Primer (exterior surface)
18. Insulation: Yes
19. Hydrostatic Test: Full of Water

APPURTENANCE SCHEDULE FOR 30,000 GALLON TANK

CONN NO.	SIZE	AS A RATING	SERVICE	MATERIALS
1	20"	API - 650	SHELL MANWAY	CARBON STEEL
2	20"	API - 650	ROOF MANWAY	
3	4"	150 # R.F.	PUMP SUCTION	
4	4"		TANK INLET	
5	2"		NITROGEN VENT	304 LS.S.
6	2"		NITROGEN BLANKET	304 LS.S.
7	3"		PRESSURE VACUUM VENT	CARBON STEEL
8	11/4"		LEVEL GAGE CONNECTION	304 LS.S
9	11/4"		" " "	
10	11/4"		" " "	
11	1"		TEMPERATURE INDICATOR	
12	1"		TEMPERATURE CONTROLLER	
13	2"		DRAIN	
14	3/4"	3000#Cpl'g	5 - HOT WATER OUTLETS	CARBON STEEL
15	3/4"	3000#Cpl'g	5 - HOT WATER INLETS	
16			5 - 22" x 119" SINGLE EMBOSSED PANEL COILS CLAMPED TO TANK SHELL	



TYPICAL TOLUENE DIISOCYANATE STORAGE TANK

I. STORAGE TANKS

(A) Type

The storage tank may be either vertical or horizontal depending on preference and available space.

Vertical tanks are recommended and should be fabricated in accordance with API Specification 650. Drawing on previous page shows typical details and dimensions of 6,000, 15,000 and 30,000 gallon storage tanks.

(B) Materials of Construction

Tanks should be fabricated of either Type 304L stainless steel or lined carbon steel using an epoxy-phenolic lining.

(C) Preparation of Steel Tanks for Lining

1. Prior to application of the lining the following precautions should be taken.

   a. All welds inside the tank should be ground smooth and all voids should be filled with weld metal and ground smooth.

   b. All inside corners of the tank should be ground to 1/8" radius (minimum).

   c. All dents and gouges should be filled with weld metal and ground smooth.

   d. All weld splatter must be removed.

   e. Hydrostatic test must be made prior to installation of lining.

   f. All interior metal surfaces should be sandblasted to "white metal" in accordance with the Steel Structures Painting Council "Surface Preparation No. 5". The lining should be applied as soon as possible after sandblasting.

   g. Any nozzles and lines too small to sandblast should be fabricated of Type 304L stainless steel.

(D) Tank Lining

An acceptable tank lining is Amercoat 75, an epoxy-phenolic manufactured by Ameron, Protective Coatings Div., Brea, Ca. 92621.

The manufacturer of the lining material selected should be contacted for a listing of locally recommended applicators.

(E) Tank Accessories

1. Tank Heater

In order to maintain the tank contents between 75°F. and 90°F., provision for heating must be provided. For vertical tanks the lower 22" of tank shell should be jacketed using a thermo-panel plate coil and hot water. The panels should extend completely around the tank and should be embossed on one side only. Suitable plate coils are manufactured by:

Tranter Manufacturing, Inc.
Platecoil Division
Lansing, Michigan

Dean Products, Inc.
616 Franklin Avenue
Brooklyn, New York

2. Level Gauge

A suitable level gauge for a vertical storage tank is manufactured by:

Varec, Incorporated
2820 North Alameda Street
Compton, California

The tank gauge should be Varec's Figure No. 2504, Model B with negator motor and liquid seal. The material of construction should be:

Housing and Sheaves - aluminum
Float and Guide Wires - 316 stainless steel

3. Vent Valve

The conservation vent valve should be Varec's Figure No. 2010-81 with an aluminum body, bucket type pallet and Viton "A". The valve should be set at 6 to 8 ounces pressure and 3 ounces vacuum.

If nitrogen or dry air is used for unloading, the vent valve should be sized to handle the maximum flow rate of the unloading gas system. If the vent valve is undersize, a sudden surge of gas when the tank truck or car becomes empty could rupture the storage tank.

II. UNLOADING AND TRANSFER PUMP

It is recommended that Crane Company's Chempump (Model G D Series) or equivalent be used to handle TDI. The pump should have provisions for a welded heating jacket using tempered water as the heating medium. The pumping temperature is 75°F. - 90°F. The pump should be built of 316 stainless steel with graphite bearings. The suction and discharge pressures should be determined by the pumping system. The suction and discharge connections should be 150# ASA raised face flanges.

III. PIPE AND PIPING ACCESSORIES

(A) General Information

1. All piping in TDI service should be fabricated of 304L stainless steel.

2. All TDI lines should be either electrically traced or hot water traced and insulated. Electrical tracing is preferred. The tracing system should be controlled to maintain the contents of the TDI lines at 75°F. to 90°F. If hot water is used for the heating media, the water temperature should be maintained at 90°F.

(B) Piping Specifications

Operating Pressure Range: 0-180 psig

Maximum Operating Temperature: 120°F.

1. Pipe: Type 304L stainless steel, ASTM-A-312 Gr. TP-304L, seamless or welded.

1/2" thru 6"	-Schedule 10S
8" up	-Schedule 5S

Construction:

1/2" thru 1-1/2"	-Socket welded-flanged where shown
2" thru 8"	-Butt welded-flanged where shown

2. Fittings:

1/2" thru 1-1/2"	-Socket weld-2000# forged stainless steel, ASTM A-403 Gr WP 304L
2" thru 8"	-Butt weld-forged stainless steel, ASTM A-403, Gr WP 304L, same wall

3. Flanges

1/2" thru 1-1/2"	-Socket weld-150# ASA raised face-per ASTM A-182, Gr 304L stainless steel

(B) Piping Specifications (cont'd)

	2" thru 8"	- Weld neck-150# ASA raised face, per ASTM A-182, Gr 304L stainless steel, bore to match pipe wall thickness
4. Valves:	All sizes	- 150# ASA, raised face flanged type 316 stainless steel body and trim, Durco Figure G-11.

5. Bolting: Alloy steel studs, ASTM A-193 Gr B8 each with two hex nuts ASTM A-194 Gr 8.

6. Gaskets: 1/16" thick Teflon, contact width per ASA B 16.21 Table 1.

7. Flexible Hose: 3" corrugated and braided 316 stainless steel, length as required. Allied Metal Hose Co. or equivalent.

IV. LINE FILTER

Filtering the TDI prior to pumping to the process is desirable. The filter should be constructed of 304L stainless steel with internals of 316 stainless steel and have removable cartridges. Connections should be provided for gas purging the filter prior to opening. The Commercial Filters Corporation Type Wy filter (Model No. 12408-18 TSS-50) or Warner Lewis Company Model 1M filter (or equal) with fiberglas filter elements are satisfactory for this service. Cellulose filters should not be used.

V. GAS PURGING AND BLANKETING SYSTEM

The storage tank should be blanketed with an inert gas (nitrogen) at all times. Also during tank car or truck unloading, a pressure equalizing line should be connected between the storage tank and tank car or truck.

If nitrogen is not available dry air blanket can be used; however, the air should be dried to a -40°F dew point.

The blanketing gas pressure should be controlled between 3 ounces vacuum and 8 ounces pressure.

CAUTION: All blanketing and purge gases must be disposed of in a manner safe to personnel. A scrubbing system might be necessary depending on local conditions.

VI. ESTIMATED MATERIAL COSTS

Item	Vendor	Estimated Cost*
TDI storage tank complete with lining and heater panels		
6,000 gal. 15,000 gal. 30,000 gal.	9'0" x 13'9" 13'0" x 16'3" 16'6" x 19'9"	$10,000 $20,000 $26,000
Tank Heater 22" x 119"	Transfer Mfg. Inc. Platecoil Division Lansing, Michigan	$280 each
Level Gauge	Varec, Inc. 2820 N. Alameda Street Compton, CA	$510
Vent Valve	Varec, Inc.	$285
Unloading and Transfer Pump with Welding Heating Jacket	Chempump Division GD-5K-152H-1S Crane Company GD-17 1/2K-152H-1S Warrington Industrial Park Warrington, PA	$5312 $5762
Line Filter	Commercial Filters Carborundum Company Lebanon, IN	$1443

For the purposes of estimating, the installed costs of a 30,000 gallon storage system constructed generally according to our sketches on page 29 and page 30 are as follows:

	Order of Magnitude Costs
Insulated Storage Tank and Foundations	$40,000
Piping and Accessories	42,000
Contingency	30,000
Electrical	20,000
Hot Water System, including Piping and Tracing	12,000
Engineering	19,000
Pumps	6,000
Miscellaneous Work	10,000
TOTAL	$179,000

It should be pointed out that these figures are based on a hypothetical outdoor storage system and should be used only as a starting point in determining the costs of a specific system. A nitrogen supply header is assumed to be in the vicinity of the storage tank location.

BASF Wyandotte Corporation - Polymers Group - Parsippany, NJ 07054

Sales Offices

To Place orders, contact either:

BASF Wyandotte Corp.
Urethane Division
Customer Service
100 Cherry Hill Road
Parsippany, NJ 07054
201-263-5613
800-526-1072

or

BASF Wyandotte Corp.
Pacific District
Saddleback Square
Suite 1001
1224 Firestone Boulevard
Norwalk, CA 90650
213-864-7471

ASSISTANCE IN UNLOADING AND IN BULK HANDLING CAN BE OBTAINED BY CALLING THE URETHANE TECHNICAL SERVICE DEPARTMENT IN PARSIPPANY AT THE TELEPHONE NUMBER LISTED ABOVE.

THE INFORMATION PRESENTED IN THIS MANUAL IS DRAWN FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE AND ACCURATE. SINCE THE APPLICATION OF THIS INFORMATION IS BEYOND OUR CONTROL, NO WARRANTY AS TO THE COMPLETENESS AND ACCURACY, IMPLIED OR OTHERWISE, IS MADE. LIKEWISE, STATEMENTS CONCERNING THE USE OF THIS INFORMATION ARE NOT INTENDED AS RECOMENDATIONS TO USE THEM IN INFRINGEMENT OF ANY PATENT.

APPENDIX 1

LIST OF CAIR REFERENCES

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13a. and 13b. Library Computer Search - Syracuse Research Corporation Calculated Values for 2,6-Toluenediisocyanate, Printout of Results.

14a. U.S. Environmental Protection Agency, Identification and Listing of Waste under RCRA (Resource Conservation and Recovery Act), Subtitle C, Section 3001; Health and Environmental Profiles (40 CFR 261). Backgroung Document, MS-1941.29, PB81-190019, NTIS, October, 1980. (From C15-OHMTADS database).

14b. A. J. Leo, Report on the Calculation of Octanol/Water Log P Values for Structures in EPA Files, (1978). (From C15 ISHOW database).

7.05 **Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.**

CBI

[ ] **Process type .....** TDI PREPOLYMER REACTION PROCESS

Process Stream ID Code	Process Stream Description	Physical State[1]	Stream Flow (kg/yr)
7I	TDI from Tank 7.1	OL	0.76 Million
7J	TDI from Pump 7.3	OL	0.76 Million
7K	Polymeric Methylene(Bis) Phenyl Isocyanate	OL	0.08 Million
7L	TDI Prepolymer	OL	0.02 MIllion
7M	Polyol	OL	0.25 Million
7N	Benzoylchloride	OL	$74X10^{-6}$Million
7O	Catalyst	OL	$1X10^{-6}$Million
7P	Reactor Vent	GU	$9.58X10^{-3}$Million

[1]Use the following codes to designate the physical state for each process stream:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[X] **Mark (X) this box if you attach a continuation sheet.**

7.05 **Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.**

CBI

[ ] **Process type .....** TDI PREPOLYMER REATION PROCESS

Process Stream ID Code	Process Stream Description	Physical State[1]	Stream Flow (kg/yr)
7Q	Vacuum Vent from 7.5	GU	$2.84X10^{-3}$Millio
7R	Vacuum Knock Out Tank Residue	OL	$0.42X10^{-3}$Million
7S	Vacuum Vent from 7.6	GU	$2.84X10^{-3}$Million
7T	Vacuum Pump Vent	GU	$2.84X10^{-3}$Million
7U	TDI Product	OL	1.29 Million
7V	Used FIlters	OL,SO	$0.45X10^{-3}$Million
7W	Filtered TDI Product	OL	1.29 Million
7X	Washing Residue	OL	$17.6X10^{-3}$Million

[1]Use the following codes to designate the physical state for each process stream:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[X] **Mark (X) this box if you attach a continuation sheet.**

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

[ ] Process type ..... TDI PREPOLMER REACTION PROCESS

Process Stream ID Code	Process Stream Description	Physical State[1]	Stream Flow (kg/yr)
7Y	TDI Product to Drumming	OL	0.47 Million
7Z	TDI Product to Tank Truck	OL	0.82 Million
7AA	Tank Truck Loading Exhaust	GU	$0.81X10^{-3}$Million

[1]Use the following codes to designate the physical state for each process stream:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[ ] Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

[ ] Process type ..... TDI PREPOLYMER REATION PROCESS

a. Process Stream ID Code	b. Known Compounds[1]	c. (E,W) Concentrations[2,3] (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7D	Nitrogen	99%	None	
	Air	1%		
	TDI	.02 ppm		
7E	Nitrogen	99%	None	
	Air	1%		
	TDI	.02 ppm		
7F	Benzoylchloride	> 99%	None	
	Benzotrichloride	< 0.05%		

7.06 continued below

[X] Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Process Stream ID Code	b. Known Compounds[1]	c. (E,W) Concentrations[2,3] (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7G	TDI	99.995%	None	
	Benzoyl Chloride	.005%		
	Benzotrichloride	< 2.5 ppm		
7H	TDI	99.995%	None	
	Benzoyl Chloride	.005%		
	Benzotrichloride	< 2.5 ppm		
7I	TDI	100%	None	

7.06 continued below

[X] Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Process Stream ID Code	b. Known Compounds[1]	c. (E,W) Concentrations[2,3] (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7J	TDI	100%	None	
7K	Polymeric Methylene(Bis) Phenyl Isocyanate	100%	None	
7L	TDI	90 ± 3%	None	
	TDI RXN Product	10 ± 3%		

7.06 continued below

[X] Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Process Stream ID Code	b. Known Compounds[1]	c. (E,W) Concentrations[2,3] (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7M	Polyol	>99%	None	
	Water	<0.05%		
7N	Benzoyl Chloride	>99%	None	
	Benzotrichloride	<0.05%		
7O	Dibutyltin Dilaurate	>99%	None	
	Water	<.05%		

7.06 continued below

[X] Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Process Stream ID Code	b. Known Compounds[1]	c. (E,W) Concentrations[2,3] (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7P	Air	100%	None	
	TDI	20 ppm		
	Polymeric Methylene(Bis) Penyl Isocyanate	.03 ppm		
7Q	Air	> 99%	None	
	TDI	80ppm		
	Polymeric Methylene(Bis) Phenyl Isocyanate	20 ppm		
7R	Oil	> 99%	None	
	TDI	200 ppm		
	Polymeric Methylene(Bis) Phenyl Isocyanate	40 ppm		

7.06 continued below

[X] Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Process Stream ID Code	b. Known Compounds[1]	c. (E,W) Concentrations[2,3] (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7S	Air	100%	None	
	TDI	1 ppm		
7T	Air	100%	None	
	TDI	1 ppm		
7U	TDI	46.24%	~~Benzotrichloride~~	2 ppm
	Polymeric Methylene (Bis) Phenyl Isocyanate	4.36%		
	Isocyanate Reaction Prod	49.40%		
	Benzoyl Chloride	60 ppm		

7.06 continued below

[X] Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Process Stream ID Code	b. Known Compounds[1]	(E,W) c. Concentrations[2,3] (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7V	TDI	46.24%	Benzotrichloride	2 ppm
	Polymeric Methylene(Bis) Phenyl Isocyanate	4.36%		
	Isocyanate Reaction Prod	49.40%		
	Benzoyl Chloride	60 ppm		
7W	TDI	46.24%		
	Polymeric Methylene(Bis) Phenyl Isocyanate	4.36%		
	Isocyante Reaction Prod	49.40%		
	Benzoyl Chloride	60 ppm		
7X	Methylene Chloride	80%	Benzoyl Chloride	12 ppm
	Polymeric Methylene(Bis) Phenyl Isocyanate	1%	Benzotrichloride	.4 ppm
	TDI	9%		
	Isocyanate Reaction Prod	10%		

7.06 continued below

[X] Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Process Stream ID Code	b. Known Compounds[1]	c. (E,W) Concentrations[2,3] (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7Y	TDI	46.24%	Benzotrichloride	2 ppm
	Polymeric Methylene(Bis) Phenyl Isocyanate	4.36%		
	Isocyanate Reaction Product	49.40%		
	Benzoyl Chloride	60 ppm		
7Z	TDI	46.24%	Benzotrichloride	2 ppm
	Polymeric Methylene(Bis) Phyenyl Isocyanate	4.36%		
	Isocyanate Reaction Product	49.40%		
	Benzoyl CHloride	60 ppm		
7AA	TDI	3 ppm	None	
	Polymeric Methylene(Bis) Phenyl Isocyanate	<1 ppm		
	Air	10%		
	Nitrogen	90%		

7.06 continued below

[ ] Mark (X) this box if you attach a continuation sheet.

PART B RESIDUAL GENERATION AND CHARACTERIZATION

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Stream ID Code	b. Type of Hazardous Waste[1]	c. Physical State of Residual[2]	d. Known Compounds[3]	e. (E.W) Concentrations (% or ppm)[4,5,6]	f. Other Expected Compounds	g. Estimated Concentrations (% or ppm)
8E	R,T	GU	TDI	<.001 ppm	None	
		GU	*MDI	<.001 ppm		
		GU	Air	10%		
		GU	Nitrogen	90%		
8F	R,T	OL	TDI	300 ppm	None	
		OL	MDI	20 ppm		
		Solid	Carbon	>99%		
8G	R,T	OL	Oil	>99%	None	
		OL	TDI	200 ppm		
		OL	MDI	40 ppm		
8H	R,T	GU	TDI	<.0001 ppm	None	
		GU	MDI	<.0001 ppm		

8.05 continued below

* MDI: POLYMERIC METHLENE (BIS) PHENYL ISOCYANATE

[X] Mark (X) this box if you attach a continuation sheet.

PART B RESIDUAL GENERATION AND CHARACTERIZATION

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Stream ID Code	b. Type of Hazardous Waste[1]	c. Physical State of Residual[2]	d. Known Compounds[3]	e. (E,W) Concentrations (% or ppm)[4,5,6]	f. Other Expected Compounds	g. Estimated Concentrations (% or ppm)
8I	T	OL	**$MeCl_2$	80%	None	
		OL	TDI	2%		
		OL	*MDI	14%		
		OL	Isocyanate Reaction Product	4%		
8J	R,T	GU	TDI	.001 ppm	None	
		GU	MDI	.001 ppm		
		GC	$MeCl_2$	100 ppm		
8K	R,T	GU	TDI	.001 ppm	None	
		GU	MDI	.001 ppm		

8.05 continued below

*MDI: POLYMERIC METHYLENE (BIS) PHENYL ISOCYANATE
$MeCl_2$: Methylene Chloride

[ ] Mark (X) this box if you attach a continuation sheet.

8.06 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Stream ID Code	b. Waste Description Code[1]	c. Management Method Code[2]	d. Residual Quantities (kg/yr)	e. Management of Residual (%) On-Site	e. Management of Residual (%) Off-Site	f. Costs for Off-Site Management (per kg)	g. Changes in Management Methods
8E	B91	M4C/M5A	8,100	100		N/A	None
8F	A12	3I	91		100	$5.30	None
8G	A12	3I	4,200		100	$4.91	None
8H	B91	M5A	938,400	100		N/A	None

[1]Use the codes provided in Exhibit 8-1 to designate the waste descriptions

[2]Use the codes provided in Exhibit 8-2 to designate the management methods

[X] Mark (X) this box if you attach a continuation sheet.

8.06 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

a. Stream ID Code	b. Waste Description Code[1]	c. Management Method Code[2]	d. Residual Quantities (kg/yr)	e. Management of Residual (%) On-Site	e. Management of Residual (%) Off-Site	f. Costs for Off-Site Management (per kg)	g. Changes in Management Methods
8I	A08	3I	54,000		100	$4.91	None
8J	B91	M5A	76,800,000	100		N/A	None
8K	B91	MSA	2840	100		N/A	None

[1]Use the codes provided in Exhibit 8-1 to designate the waste descriptions

[2]Use the codes provided in Exhibit 8-2 to designate the management methods

[ ] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 2

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
H	4	Inhalation	GU	A	0
K	1	Inhalation	GU	A	0
F	3	Inhalation	GU	A	0

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours
D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[X] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 3

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
B	3	Direct Skin Contact	OL	A	48
B	3	Inhalation	GU	A	48
B	3	Eye Contact	GU	A	48
A	4	Inhalation	GU	A	48
A	4	Eye COntact	GU	A	48

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours
D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[X] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 4

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
A	4	Inhalation	GU	A	0
B	9	Inhalation	GU	A	0
K	1	Inhalation	GU	A	0

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours
D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[X] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 5

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
A	2	Inhalation	GU	A	0
B	14	Inhalation	GU	A	0
C	5	Inhalation	GU	A	0
D	1	Inhalation	GU	A	0
E	5	Inhalation	GU	A	0
F	4	Inhalation	GU	A	0
G	3	Inhalation	GU	A	0
H	4	Inhalation	GU	A	0
I	3	Inhalation	GU	A	0
J	2	Inhalation	GU	A	0
K	8	Inhalation	GU	A	0

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours
D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[X] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 6

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
C,D,E	11	Direct Skin Contact	OL	A	0
F,I,J,K	7	Direct Skin Contact	OL	A	0
C,D,E	11	Inhalation	GU	A	0
F,I,J,K	7	Inhalation	GU	A	0

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours
D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[X] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 7

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
G	3	Direct Skin Contact	OL	A	0
G	3	Inhalation	GU	A	0
I	1	Direct Skin Contact	OL	A	0
I	1	Direct Skin Contact	GU	A	0
K	4	Direct Skin Contact	OL	A	0
K	4	Inhalation	GU	A	0

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours
D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[X] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 8

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
B	11	Inhalation	GU	A	0
F	3	Inhalation	GU	A	0
H	4	Inhalation	GU	A	0
K	3	Inhalation	GU	A	0

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours
D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[X] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 9

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
A	1	Inhalation	GU	A	0
B	15	Inhalation	GU	A	0
C	3	Inhalation	GU	A	0
F	2	Inhalation	GU	A	0
G	3	Inhalation	GU	A	0
H	4	Inhalation	GU	A	0
I	1	Inhalation	GU	A	0
K	7	Inhalatin	GU	A	0

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours
D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[X] Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 10

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance[1]	Average Length of Exposure Per Day[2]	Number of Days per Year Exposed
A	4	Inhalation	GU	A	0
B	15	Inhalation	GU	A	0
G	1	Inhalation	GU	A	0
K	1	Inhalation	GU	A	0

[1]Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)
GU = Gas (uncondensible at ambient temperature and pressure; includes fumes, vapors, etc.)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

[2]Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
B = Greater than 15 minutes, but not exceeding 1 hour
C = Greater than one hour, but not exceeding 2 hours
D = Greater than 2 hours, but not exceeding 4 hours
E = Greater than 4 hours, but not exceeding 8 hours
F = Greater than 8 hours

[ ] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 2

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
H	0 ppm	0 ppm
K	0 ppm	0ppm
F	0 ppm	0 ppm

[X] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 3

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
B	2 ppb	6 ppb
A	2 ppb	6 ppb

[X] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 4

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
A	0 ppb	0 ppb
B	0 ppb	0 ppb
K	0 ppb	0 ppb

[X] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 5

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
A	0 ppb	0 ppb
B	0 ppb	0 ppb
C	0 ppb	0 ppb
D	0 ppb	0 ppb
E	0 ppb	0 ppb
F	0 ppb	0 ppb
G	0 ppb	0 ppb
H	0 ppb	0 ppb
I	0 ppb	0 ppb
J	0 ppb	0 ppb
K	0 ppb	0 ppb

[X] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 6

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
C	0 ppb	0 ppb
D	0 ppb	0 ppb
E	0 ppb	0 ppb
F	0 ppb	0 ppb
I	0 ppb	0 ppb
J	0 ppb	0 ppb
K	0 ppb	0 ppb

[X] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 7

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
G	0 ppb	0 ppb
I	0 ppb	0 ppb
K	0 ppb	0 ppb

[X] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 8

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
B	0 ppb	0 ppb
F	0 ppb	0 ppb
H	0 ppb	0 ppb
K	0 ppb	0 ppb

[X] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 9

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
A	0 ppb	0 ppb
B	0 ppb	0 ppb
C	0 ppb	0 ppb
F	0 ppb	0 ppb
G	0 ppb	0 ppb
H	0 ppb	0 ppb
I	0 ppb	0 ppb
K	0 ppb	0 ppb

[X] Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 10

Labor Category	8-hour TWA Exposure Level (ppm, mg/m^3, other-specify)	15-Minute Peak Exposure Level (ppm, mg/m^3, other-specify)
A	0 ppb	0 ppb
B	0 ppb	0 ppb
G	0 ppb	0 ppb
K	0 ppb	0 ppb

[ ] Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 2

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	N			
General dilution	Y	1986	N	
Other (specify)				
	N			
Vessel emission controls	N			
Mechanical loading or packaging equipment	N			
Other (specify)				
	N			

[X] Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 3

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	N			
General dilution	Y	1986	N	
Other (specify)				
	N			
Vessel emission controls	Y	1986	N	
Mechanical loading or packaging equipment	N			
Other (specify)				
	N			

[X] Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 4

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	Y	1986	N	
General dilution	Y	1986	N	
Other (specify)				
Point Source (elephant trunk)	Y	1986	N	
Vessel emission controls	N			
Mechanical loading or packaging equipment	N			
Other (specify)				
	N			

[X] Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 5

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	N			
General dilution	Y	1986	N	
Other (specify)				
	N			
Vessel emission controls	N			
Mechanical loading or packaging equipment	N			
Other (specify)				
	N			

[X] Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 6

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust(lab hood)	Y	1986	N	
General dilution	Y	1986	N	
Other (specify)				
point source (elephant trunk)	Y	1986	Y	1988
Vessel emission controls	N			
Mechanical loading or packaging equipment	N			
Other (specify)				
	N			

[X] Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 7

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	Y	1986	N	
General dilution	Y	1986	N	
Other (specify)				
point source (elephant trunk)	Y	1986	N	
Vessel emission controls	N			
Mechanical loading or packaging equipment	N			
Other (specify)	N			

[X] Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 8

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	N			
General dilution	Y	1986	N	
Other (specify)				
	N			
Vessel emission controls	N			
Mechanical loading or packaging equipment	N			
Other (specify)				
	N			

[X] Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 9

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	N			
General dilution	Y	1986	N	
Other (specify)				
	N			
Vessel emission controls	N			
Mechanical loading or packaging equipment	N			
Other (specify)				
	N			

[X] Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 10

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	N			
General dilution	Y	1986	N	
Other (specify)				
	N			
Vessel emission controls	N			
Mechanical loading or packaging equipment	N			
Other (specify)				
	N			

[ ] Mark (X) this box if you attach a continuation sheet.

9.13 **Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.**

CBI

[ ] **Process type .....** TDI PREPOLYMER REACTION PROCESS

Work area 2

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
None	

[X] **Mark (X) this box if you attach a continuation sheet.**

9.13 **Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.**

CBI

[ ] **Process type .....** TDI PREPOLYMER REACTION PROCESS

Work area 3

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
Tank Truck Loading Exhaust Adsorber	80

[X] **Mark (X) this box if you attach a continuation sheet.**

9.13 **Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.**

CBI

[ ] **Process type .....** TDI PREPOLYMER REACTION PROCESS

Work area 4-10

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
None	

[ ] **Mark (X) this box if you attach a continuation sheet.**

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 2

Equipment Types	Wear or Use (Y/N)
Respirators	N
Safety goggles/glasses	Y
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	N
Other (specify)	
Safety Shoes	Y

[X] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 3

Equipment Types	Wear or Use (Y/N)
Respirators	Y
Safety goggles/glasses	Y
Face shields	Y
Coveralls	Y
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
Rubber Boots/ Safety Shoes	Y

[X] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 4

Equipment Types	Wear or Use (Y/N)
Respirators	Y
Safety goggles/glasses	Y
Face shields	Y
Coveralls	Y
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify) Rubber Boots/ Safety Shoes	Y

[X] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 5

Equipment Types	Wear or Use (Y/N)
Respirators	N
Safety goggles/glasses	N
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	N
Other (specify)	

[X] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 6

Equipment Types	Wear or Use (Y/N)
Respirators	N
Safety goggles/glasses	Y
Face shields	Y
Coveralls	Y
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify) Rubber Boots/ Safety Shoes	Y

[X] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 7

Equipment Types	Wear or Use (Y/N)
Respirators	N
Safety goggles/glasses	Y
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	N
Other (specify) Rubber Boots/ Safety Shoes	Y

[X] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 8

Equipment Types	Wear or Use (Y/N)
Respirators	N
Safety goggles/glasses	Y
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	N
Other (specify) Rubber Boots/ Safety Shoes	Y

[X] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 9

Equipment Types	Wear or Use (Y/N)
Respirators	N
Safety goggles/glasses	N
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	N
Other (specify)	
_____	_____
_____	_____

[X] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 10

Equipment Types	Wear or Use (Y/N)
Respirators	Y
Safety goggles/glasses	Y
Face shields	Y
Coveralls	Y
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify) Rubber Boots/ Safety Shoes	Y

[ ] Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

[ ]

Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 2-10

Signs posted forbidding food in the plant area, Evacuation and emergency response training, Protective equipment training, Routine safety meetings, Uniforms provided

9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type ..... TDI PREPOLYMER REACTION PROCESS

Work area 2-10

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping	N/A			
Vacuuming	N/A			
Water flushing of floors	X			
Other (specify)	X			
* Neutralizer				

* Do not have routine leaks or spills of TDI. When they happen, they are sprayed with a neutralizing solution and cleaned up immediately.

[ ] Mark (X) this box if you attach a continuation sheet.